



DWC 15th Annual Educational Conference

Permanent Disability Rating

Presenters

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Los Angeles Sheraton February 28-29, 2008

Oakland Marriot March 3-4, 2008



Current Rating Issues

DWC Statewide Training

- LAX Sheraton
- Marriott City Center

February/March 2008

Trainers

- Annalisa Faina, Supervisor, North
- Tess Snaer, Supervisor, South
- Barry Knight, Supervisor, Central
- Blair Megowan, Manager

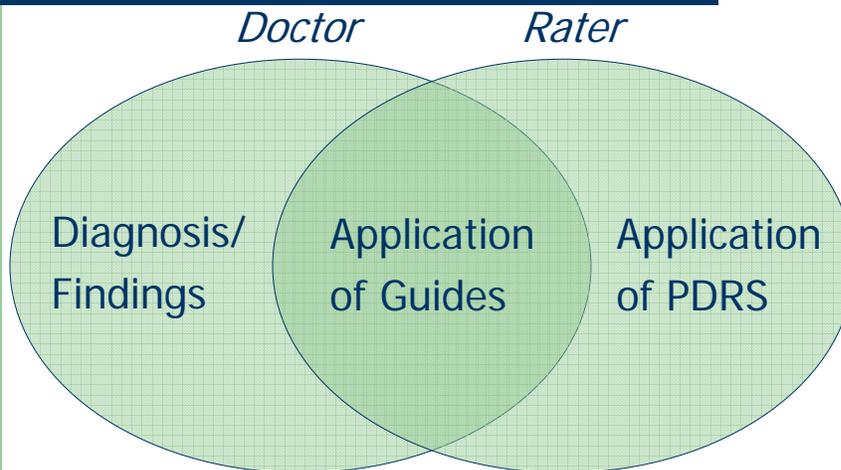
Overview of Presentation

- Changes in law in 2008
- Roles of doctor and rater
- Unscheduled impairment
- Problematic rating protocols
- Less common impairments

Changes in Law in 2008

- AMA Guides, 5th edition to remain in force absent legislative action
- New PDRS in 2008
 - FEC factors reassigned to better reflect wage loss
 - FEC multipliers increased
 - Age adjustment modified
 - Effective for injuries o/a adoption date

Roles of Doctor and Rater



Rater's Toolkit

- Address/evaluate rating aspects of report, not medical aspects
- Annotate ratings to document underlying assumptions, caveats
- Seek clarification to obtain missing information or request application of a Guide's protocol
- Correct impairment ratings to conform to *Guides* protocols

Unscheduled Impairments

- “In situations where impairment ratings are not provided, the *Guides* suggests that physicians use clinical judgment, comparing measurable impairment resulting from the unlisted condition to measurable impairment resulting from similar conditions with similar impairment of function in performing activities of daily living.”

Corollary to Guides Principle

- If impairment rating protocol is provided for a particular condition, then it should be used

Unscheduled Impairment Example

- Worker with CTS has negative clinical findings but positive nerve conduction study which justifies 5UE rating. Doctor opines that 10UE for grip loss more truly represents impairment
- Would this opinion satisfy the criteria for a unscheduled impairment?

Problematic Rating Protocols

- DRE v. ROM
- Grip Loss
- Sleep Disorders
- Gait Derangement
- Pain

DRE vs. ROM



Is There a Default Method?

- “...the DRE method is the primary method used to evaluate individuals with an injury. Use the ROM method when the impairment is not caused by an injury or when an individual’s condition is not well represented by a DRE category.” (p. 374)

Principal ROM Criteria

- Multi-level involvement
- Recurrent injury
- Alteration of motion segment integrity – fusion or increased motion
- Impairment not caused by injury

Multiple Multi-level Characterizations

- Flow chart: 

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graph LR; A[Single level] -- No --> B[ROM method]
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- "...fractures at multiple levels, disk herniations, or stenosis with radiculopathy at multiple levels or bilaterally." (p. 380)
- [if] there is radiculopathy bilaterally or at multiple levels in the same spinal region," (p. 380)

DEU Position – Multi-level

- Multi-level bulges, degenerative changes, or herniations are not sufficient by themselves to invoke the ROM method.
- There must be multi-level (or bilateral) radiculopathy

Multi-level example

- 37-year-old woman experiences persistent pain in the neck and lateral right forearm and thumb (C6 distribution) following rear-end collision
- MRI shows 3 mm herniated disks at C4-5, and C5-6
- DRE or ROM?

Recurrent injury

- “Where there is recurrent radiculopathy caused by a new (recurrent) disk herniation or a recurrent injury... (p. 380)
- “there is recurrent disk herniation or stenosis with radiculopathy...in the same spinal region” (p. 380)

DEU Position – Recurrent Injury

- A second injury to the same spinal region by itself is not sufficient to invoke ROM
- There must be recurrent radiculopathy

Recurrent injury example

- Developed low back pain and sciatica after lifting furniture at home – treated surgically with near complete relief
- 15 months after injury, re-injured lumbar spine on the job with substantial low back pain and MRI showing bulging disk at L4-5
- DRE or ROM?

Grip Loss

- “Because strength measurements are functional tests influenced by subjective factors...the *Guides* does not assign a large role to such measurements.” (p. 507)



Grip Loss

- “In a rare case, if the examiner believes the individual’s loss of strength represents an impairing factor that has not been considered adequately by other methods in the *Guides*, the loss of strength may be rated separately.”
- Grip impairment typically used for muscle tear, tendon release, excision of epicondyle

Restrictions on Using Grip Loss

- If combining with other impairments, must be based on unrelated etiologic or pathomechanical causes
- Cannot be rated in presence of decreased motion, painful conditions, deformities, or absence of parts...that prevent effective application of maximal force...

Grip Example

- Social worker fractured left middle and ring fingers when hand got caught in a swinging door; persistent pain on gripping
- Unilateral restriction from repetitive gripping
- ROM flexion losses rate 4 UE
- Grip strength satisfies validity testing and rates 10 UE
- What is correct rating?

Sleep Disorders

- Rating protocol in Chapter 13 dealing with central and peripheral nervous system disorders
- Typical disorders include: central sleep apnea, Parkinson's disease, multiple sclerosis
- Must be supported by formal study in a sleep laboratory

Sleep Disorders

- Back pain-induced sleep disturbances normally reflected in back rating
 - Sleep is an activity of daily living
 - ADL deficits are reflected in placement within DRE ranges
 - Pain-induced ADL deficits are reflected in pain add-on



Sleep Disorders – Example 13-17

- Worker gained 45 pounds following crush injury to foot which prevented exercise
- Diagnosis of obstructive sleep apnea (OSA) based on polysomnogram
- 9 WP given based on ability to complete most necessary work but works less efficiently
- About 1 in 5 American adults have at least mild OSA

Gait Derangement

- “Whenever possible, the evaluator should use a more specific method.” (p. 529)
- “...does not apply to abnormalities based only on subjective factors, such as pain or sudden giving-way, as with, for example, and individual with low-back discomfort...”



Gait Derangement – Example 17-2

- 61-year-old woman falls on steps, developing severe hip pain
- Cannot walk more than 5 blocks, must use cane outside home, cannot run
- Hip arthritis = 3 WP
- 20 WP given for requirement to use cane routinely
- Higher rating more accurately represents clinical condition; rationale required

Pain Add-on

- When is a pain add-on warranted?
- Is a formal pain assessment required?
- What if there are multiple body parts experiencing excessive pain?
- Can pain be added to a DRE rating? 0% rating?



Generic Pain Add-on Criterion

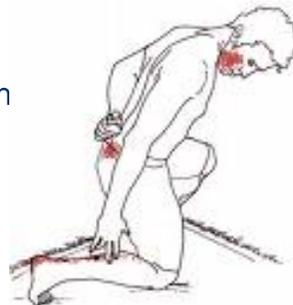
- “If the body system impairment rating appears to adequately encompass the pain experienced...[the] rating is as indicated...”
(p. 573 of errata)
- “If the individual appears to have pain-related impairment that has increased the burden of his or her condition slightly...the examiner may award...impairment of up to 3%...”
(p.573 of errata)

Formal Pain Assessment

- “If the individual appears to have pain-related impairment that has increased the burden of his or her condition *substantially*, perform a formal pain-related impairment assessment” (p. 573 of errata)
- Since it does not affect rating directly, DEU does not generally require a formal pain assessment, but description of ADL impact is always encouraged

Pain in Multiple Body Parts

- Limit of 3% per injury
- Doctor must allocate between injured body parts, for example:
 - Knee arthritis – 2% add-on
 - Shoulder instability – 1% add-on



Pain and DRE Ratings

- “Each [DRE] category includes a range to account for the resolution or continuation of symptoms and their impact on the ability to perform ADL.” (p. 384)
- No express provision in spine or pain chapters which precludes application of pain add-on to DRE rating

Pain and DRE Ratings

- DEU position – up to 3% may be added to any DRE-based rating if it does not adequately encompass the pain experienced
- Potential issue of overlap if high end of DRE range is awarded solely for pain

Pain Add-on to Zero Rating

- "...a whole person impairment rating based on the body or organ rating system of the AMA Guides...may be increased by up to 3% WPI..."
- Criterion assumes an underlying body system impairment rating greater than zero



Less Common Impairments

- Effect of treatment
- Patellofemoral pain
- Hernias

Effect of Treatment Ratings

- Two types - see page 20
 - Apparent remission of symptoms but questionable return to normal good health, e.g., diabetes under successful treatment with insulin (1-3 WP range)
 - Impairment caused by treatment, e.g., organ transplant patient treated by anticoagulants (evaluated using chapter(s) appropriate to the impairment)

Patellofemoral Pain

- Classified under degenerative joint disease (DJD) (Table 17-31, p. 544)
- Patellofemoral joint is the joint between the kneecap (patella) and thigh bone (femur)
- Footnote to Table 17-31 allows up to 5 LE for patello-femoral pain with crepitation following direct trauma to knee – joint space narrowing not required



Hernias

- Rating criteria in Table 6-9, pg 136
- Impairment ranges from 0 – 30 WP
- Based on Example 6-31, the rating is for unilateral or bilateral hernia



Hernias

- Impairment is divided into classes (10-point ranges) based on reducibility and persistence of protrusion and impact on ADL's
- Evaluating physician has to give a specific value within a class

Stepping Up To Knee Impairment



DEU thanks Kathy Nixon Legal Secretary Bakersfield

1

Knee Anatomy

Bones of the Knee

- Femur (thigh bone)
- Tibia (shin bone)
- Patella (kneecap)



2

Parts of Knee Joint

Patella-Femoral Joint

- Patella
- Patellar groove

Femoral-Tibial Joint

- Femur
- Tibia



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Knee Anatomy

Collateral Ligaments

- Medial/lateral
- Side to side stability

Meniscus

- Medial/lateral
- Between femur and tibia
- Shock absorbers

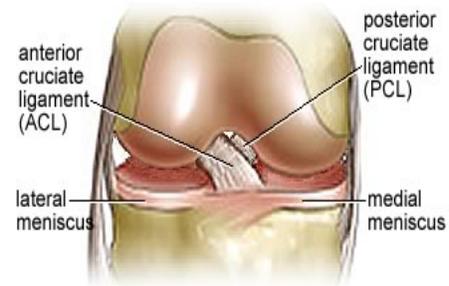


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Knee Anatomy

Cruciate Ligaments

- Anterior/Posterior
- Forms cross in front of knee
- Front to back stability



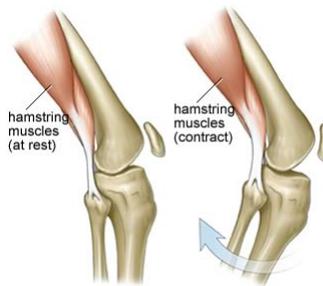
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Muscles for Knee Motion

- Quadricep Muscles



- Hamstring Muscles



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Lower Extremity Impairment

Thirteen Impairment Methods

- 1) Limb Length
- 2) Muscle Atrophy**
- 3) Ankylosis
- 4) Amputation
- 5) Arthritis**
- 6) Skin Loss
- 7) Peripheral Nerve

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Lower Extremity Methods

Methods Continued

- 8) Vascular
- 9) CRPS
- 10) Range of Motion**
- 11) Gait**
- 12) Muscle Strength**
- 13) Diagnostic Based Estimates**

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Knee Impairment

Methods of Assessment

- Atrophy
- Range of Motion/Ankylosis
- Muscle Strength
- Arthritis
- Diagnostic Based Estimates
- Gait

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Knee Impairment Example

- Custodian, aged 38, falls down stairs and twists right knee. At MMI, following partial medial meniscectomy, examination finds 1.5 cm right thigh atrophy. Muscle strength for flexion and extension is grade 4. Knee ROM is 105 degrees flexion with 5 degrees loss of extension. Cartilage interval for knee joint is 3 mm.

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Atrophy Impairment

Table 17-6

- Thigh Atrophy
- Calf Atrophy
- Difference in Circumference
- Start in LE Index
- Interpolate between values within range

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Thigh Atrophy Calculation

Table 17-6 Impairment Due to Unilateral Leg Muscle Atrophy

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

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Thigh Atrophy Calculation

- 1 cm thigh atrophy =
- 1.9 cm thigh atrophy =
- What is 1.5 cm thigh atrophy?

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Range of Motion Impairment

Table 17-10

- Fixed Values- no interpolation
- Add values within joint
- Motions
Flexion and Extension



Knee Flexion

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Range of Motion Impairment

- At MMI, 5 degrees extension loss, 105 degrees flexion (S: 0-5-105)
- Calculate range of motion impairment

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Range of Motion Impairment

Table 17 -10

Motion	Mild 10 LE	Moderate 20 LE	Severe 35 LE
Flexion	<110 degrees	<80 degrees	< 60 degrees + 2 per 10 degrees < 60
Flexion Contracture (Extension)	5-9 degrees	10-19 degrees	20+ degrees

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Range of Motion Impairment

Flexion 105 degrees =

Extension 5 degrees loss =

Add ROM impairment within joint

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Muscle Strength Impairment

Table 17-8

- Manual Muscle Testing
- Grades 0-5 (Table 17-7)
- Doctor's clinical judgment
- Grade Each Unit of Motion
- Combine Muscle Strength Impairments in Joint

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Muscle Strength Impairment

Not used for:

- Peripheral nerve injuries
- Effort inhibited by pain



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Muscle Strength Calculation

Table 17-8 Impairment Due to Lower Extremity Muscle Weakness

		Whole Person (Lower Extremity) [Foot] Impairment (%)				
Muscle Group		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		(12) [17]	5 (12) [17]	5 (12) [17]	2 (5) [7]

* Hip adduction weakness is evaluated as an obturator nerve impairment (see Table 17-37).

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Muscle Strength Calculation

Muscle Strength Flexion Grade 4 =

Muscle Strength Extension Grade 4 =

Combine Strength Impairments

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Arthritis Impairment

Table 17-31

- Degenerative Joint Disease (DJD)
- Based on cartilage interval or joint space
- Measured by x-ray



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Arthritis Calculation

Table 17-31 Arthritis Impairments Based on Roentgenographically Determined Cartilage Intervals

Joint	Whole Person (Lower Extremity) [Foot] Impairment (%)			
	3 mm	2 mm	1 mm	0 mm
Sacroiliac (3 mm)*	—	1 (2)	3 (7)	3 (7)
Hip (4 mm)	3 (7)	8 (20)	10 (25)	20 (50)
Knee (4 mm)	3 (7)	8 (20)	10 (25)	20 (50)
Patellofemoral†	—	4 (10)	6 (15)	8 (20)
Ankle (4 mm)	2 (5) [7]	6 (15) [21]	8 (20) [28]	12 (30) [43]
Subtalar (3 mm)	—	2 (5) [7]	6 (15) [21]	10 (25) [35]
Talonavicular (2-3 mm)	—	—	4 (10) [14]	8 (20) [28]
Calcaneocuboid	—	—	4 (10) [14]	8 (20) [28]
First metatarsophalangeal	—	—	2 (5) [7]	5 (12) [17]
Other metatarsophalangeal	—	—	1 (2) [3]	3 (7) [10]

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Diagnostic Based Impairment

Knee DBE include

- Meniscectomy
- Ligament laxity
- Fracture
- Patellar instability
- Joint Replacement

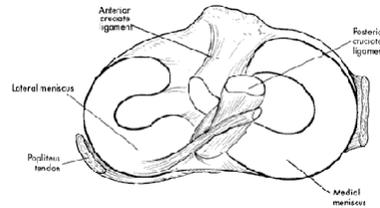


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Diagnostic Based Impairment

Partial Meniscectomy

- Removal of part of meniscus
- Surgical procedure removes torn part of injured meniscus



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Table 17-33 Impairment Estimates for Certain Lower Extremity Impairments

Region and Condition	Whole Person (Lower Extremity) [Foot] Impairment (%)	Region and Condition	Whole Person (Lower Extremity) [Foot] Impairment (%)
Pelvis*		Knee	
Pelvic fracture Undisplaced, nonarticular; healed, without neurologic deficit or other sign	0	Patellar subluxation or dislocation with residual instability	3 (7)
Displaced nonarticular fracture: estimate by evaluating shortening and weakness	—	Patellar fracture Undisplaced, healed	3 (7)
Acetabular fracture: estimate according to range of motion and joint changes	—	Articular surface displaced more than 3 mm	5 (12)
Sacroiliac joint fracture: consider displacement	1-3 (2-7)	Displaced with nonunion	7 (17)
Ischial bursts (weaver's bottom) requiring frequent unweighting and limiting of sitting time	3 (7)	Patellectomy Partial	3 (7)
Hip		Total	9 (22)
Total hip replacement; includes endoprosthesis, unipolar or bipolar Good results, 85-100 pointst	15 (37)	Meniscectomy, medial or lateral Partial	1 (2)
		Total	3 (7)
		Meniscectomy, medial and lateral Partial	4 (10)
		Total	9 (22)

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Gait Impairment

Table 17-5

- Cannot be combined with other methods
- Whenever possible use a more specific method
- Need for assistive device based on objective evidence
- Doctor should give rationale for using gait impairment

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Table 17-5 Lower Limb Impairment Due to Gait Derangement

Severity	Individual's Signs	Whole Person Impairment
Mild	a. Antalgic limp with shortened stance phase and documented moderate to advanced arthritic changes of hip, knee, or ankle	7%
	b. Positive Trendelenburg sign and moderate to advanced osteoarthritis of hip	10%
	c. Same as category a or b above, but individual requires part-time use of cane or crutch for distance walking but not usually at home or in the workplace	15%
	d. Requires routine use of short leg brace (ankle-foot orthosis [AFO])	15%
Moderate	e. Requires routine use of cane, crutch, or long leg brace (knee-ankle-foot orthosis [KAFO])	20%
	f. Requires routine use of cane or crutch and a short leg brace (AFO)	30%
	g. Requires routine use of two canes or two crutches	40%

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Combining Impairments

Knee Impairments

- Atrophy 6 LE
- Muscle Strength 23 LE
- ROM 20 LE
- Arthritis 7 LE
- DBE 2 LE

Use Table 17-2 to Combine Impairments

“X” means not to Combine

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Combining Impairments (Table 17-2 Condensed)

	Gait	Atrophy	Muscle Strength	ROM	DJD	DBE
Gait		X	X	X	X	X
Atrophy	X		X	X	X	X
Muscle Strength	X	X		X	X	X
ROM	X	X	X		X	X
DJD	X	X	X	X		
DBE	X	X	X	X		

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Combining Impairments

Knee Impairments

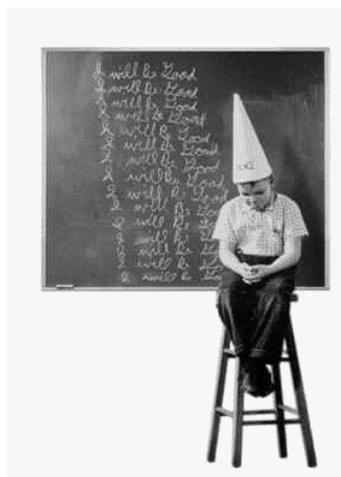
- Atrophy 6 LE
- Muscle Strength 23 LE
- ROM 20 LE
- Arthritis 7 LE
- DBE 2 LE

Only arthritis and DBE impairments may be combined

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Case Study Problem

- Read medical report dated 9/28/05
- Answer questions on worksheet
- Materials and tables in appendix
- Work alone or in groups



•Occupational Group 322 (F) Age 41

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Case Study Problem

- What are the different knee impairments indicated by the doctor in this report?

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Atrophy Impairment

The patient is right-hand-dominant. Measurements were obtained today and read as follows:

<u>Lower Extremities</u>	<u>Right</u>	<u>Left</u>
Leg Lengths	83	83
Quadriiceps	48	46
Calves	35	34
Knees	35	36

DIAGNOSIS

Page Two

Thigh Atrophy

Calf Atrophy

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Atrophy Impairment

Table 17-6 Impairment Due to Unilateral Leg Muscle Atrophy

Difference in Circumference (cm)	Impairment Degree	Whole Person (Lower Extremity) Impairment (%)
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0-0.9	None	0
1-1.9	Mild	1-2 (3-8)
2-2.9	Moderate	3-4 (8-13)
3+	Severe	5 (13)
b. Calf: The maximum circumference on the normal side is compared with the circumference at the same level on the affected side.		
0-0.9	None	0
1-1.9	Mild	1-2 (3-8)
2-2.9	Moderate	3-4 (8-13)
3+	Severe	5 (13)

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Case Study Problem

Atrophy impairment

- 2 cm thigh atrophy =
- 1 cm calf atrophy =

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DJD Impairment

OBJECTIVE FINDINGS OF DISABILITY

She does have narrowing of the joint space. She has a large 8.0 mm osteochondral defect. She has grade IV arthritis in the lateral joint as well as the trochlea. She also is required to walk with a cane. She is status post surgery. There is left-sided atrophy as noted of 2 cm of the quadriceps and 1 cm of the calf.

WORK RESTRICTIONS

The patient has a disability which limits her to semi-sedentary work.

AMA IMPAIRMENT RATINGS

The patient has 2.0 mm interval seen on the lateral aspect of the left knee, per Table 17-31, Page 544. She has mild range of motion loss as per Table 17-10, page 537.

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DJD Impairment

Cartilage Intervals

Joint	Whole Person (Lower Extremity) [Foot] Impairment (%)			
	Cartilage Interval			
	3 mm	2 mm	1 mm	0 mm
Sacroiliac (3 mm)*	—	1 (2)	3 (7)	3 (7)
Hip (4 mm)	3 (7)	8 (20)	10 (25)	20 (50)
Knee (4 mm)	3 (7)	8 (20)	10 (25)	20 (50)
Patellofemoral†	—	4 (10)	6 (15)	8 (20)
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Talonavicular (2-3 mm)	—	—	4 (10) [14]	8 (20) [28]
Calcaneocuboid	—	—	4 (10) [14]	8 (20) [28]
First metatarsophalangeal	—	—	2 (5) [7]	5 (12) [17]
Other metatarsophalangeal	—	—	1 (2) [3]	3 (7) [10]

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Case Study Problem

DJD Impairment

- Knee Joint DJD 2 mm =

What about the patellofemoral joint?

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DJD Impairment

OBJECTIVE FINDINGS OF DISABILITY

She does have narrowing of the joint space. She has a large 8.0 mm osteochondral defect. She has grade IV arthritis in the lateral joint as well as the trochlea. She also is required to walk with a cane. She is status post surgery. There is left-sided atrophy as noted of 2 cm of the quadriceps and 1 cm of the calf.

WORK RESTRICTIONS

The patient has a disability which limits her to semi-sedentary work.

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The patient has 2.0 mm interval seen on the lateral aspect of the left knee, per Table 17-31, Page 544. She has mild range of motion loss as per Table 17-10, page 537.

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DBE Impairment

DIAGNOSIS

1. Left knee arthritis with osteochondral defect, medial femoral condyle.
2. Status post left knee arthroscopy osteochondral microfracture of the medial femoral condyle and partial lateral meniscectomy - 12/9/04.

Page Two

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Pelvic fracture Undisplaced, nonarticular, healed, without neurologic deficit or other sign	0	Patellar subluxation or dislocation with residual instability	3 (7)
Displaced nonarticular fracture: estimate by evaluating shortening and weakness	—	Patellar fracture Undisplaced, healed	3 (7)
Acetabular fracture: estimate according to range of motion and joint changes	—	Articular surface displaced more than 3 mm	5 (12)
Sacroiliac joint fracture: consider displacement	1-3 (2-7)	Displaced with nonunion	7 (17)
Ischial bursitis (weaver's bottom) requiring frequent unweighting and limiting of sitting time	3 (7)	Patellectomy Partial	3 (7)
		Total	9 (22)
Hip		Meniscectomy, medial or lateral Partial	1 (2)
Total hip replacement; includes endoprosthesis, unipolar or bipolar Good results, 85-100 points†	15 (37)	Total	3 (7)
		Meniscectomy, medial and lateral Partial	4 (10)
		Total	9 (22)

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Case Study Problem

Diagnostic Based Impairment

- Partial lateral meniscectomy =

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Range of Motion Impairment

PHYSICAL EXAMINATION

On examination she has diffuse pain throughout ranges of motion of the knee. She has a positive effusion of the knee. She has pain at about 90 degrees but I am able to get it a little bit further.

Page Two

AMA IMPAIRMENT RATINGS

The patient has 2.0 mm interval seen on the lateral aspect of the left knee, per Table 17-31, Page 544. She has mild range of motion loss as per Table 17-10, page 537.

Page Three

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Range of Motion Impairment

Table 17 -10

Motion	Mild 10 LE	Moderate 20 LE	Severe 35 LE
Flexion	<110 degrees	<80 degrees	< 60 degrees + 2 per 10 degrees < 60
Flexion Contracture (Extension)	5-9 degrees	10-19 degrees	20+ degrees

45

Case Study Problem

ROM Impairment

- Mild loss of flexion =

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Case Study Problem

Non-Gait Knee Impairments

- Atrophy
- DJD
- DBE
- ROM

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Combining Impairments (Table 17-2 Condensed)

	Gait	Atrophy	Muscle Strength	ROM	DJD	DBE
Gait		X	X	X	X	X
Atrophy	X		X	X	X	X
Muscle Strength	X	X		X	X	X
ROM	X	X	X		X	X
DJD	X	X	X	X		
DBE	X	X	X	X		

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Combine Impairments

Combine Knee Impairments

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Case Study Problem

Convert to Whole Person

Adjust for Disability (occupation 322 age 41)

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Gait Impairment

Table 17-5 Lower Limb Impairment Due to Gait Derangement

Severity	Individual's Signs	Whole Person Impairment
Mild	a. Antalgic limp with shortened stance phase and documented moderate to advanced arthritic changes of hip, knee, or ankle	7%
	b. Positive Trendelenburg sign and moderate to advanced osteoarthritis of hip	10%
	c. Same as category a or b above, but individual requires part-time use of cane or crutch for distance walking but not usually at home or in the workplace	15%
	d. Requires routine use of short leg brace (ankle-foot orthosis [AFO])	15%
Moderate	e. Requires routine use of cane, crutch, or long leg brace (knee-ankle-foot orthosis [KAFO])	20%
	f. Requires routine use of cane or crutch and a short leg brace (AFO)	30%
	g. Requires routine use of two canes or two crutches	40%

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Case Study Problem

Gait Impairment

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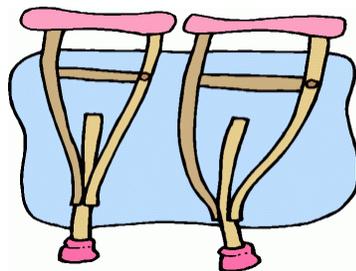
Case Study Problem

Adjusting Gait Impairment For Disability

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Case Study Problem

- State Reasons why or why not gait should be used in this case



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Gait- For and Against

Against

For

55

Sleep Arousal

- Is sleep arousal applicable in this case?

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Appendix A - AMA Guides Tables



Combining Impairments (Table 17-2 Condensed)

	Gait	Atrophy	Muscle Strength	ROM	DJD	DBE
Gait		X	X	X	X	X
Atrophy	X		X	X	X	X
Muscle Strength	X	X		X	X	X
ROM	X	X	X		X	X
DJD	X	X	X	X		
DBE	X	X	X	X		

Table 17-5 Lower Limb Impairment Due to Gait Derangement

Severity	Individual's Signs	Whole Person Impairment
Mild	<ul style="list-style-type: none"> a. Antalgic limp with shortened stance phase and documented moderate to advanced arthritic changes of hip, knee, or ankle b. Positive Trendelenburg sign and moderate to advanced osteoarthritis of hip c. Same as category a or b above, but individual requires part-time use of cane or crutch for distance walking but not usually at home or in the workplace d. Requires routine use of short leg brace (ankle-foot orthosis [AFO]) 	<p>7%</p> <p>10%</p> <p>15%</p> <p>15%</p>
Moderate	<ul style="list-style-type: none"> e. Requires routine use of cane, crutch, or long leg brace (knee-ankle-foot orthosis [KAFO]) f. Requires routine use of cane or crutch and a short leg brace (AFO) g. Requires routine use of two canes or two crutches 	<p>20%</p> <p>30%</p> <p>40%</p>
Severe	<ul style="list-style-type: none"> h. Requires routine use of two canes or two crutches and a short leg brace (AFO) i. Requires routine use of two canes or two crutches and a long leg brace (KAFO) j. Requires routine use of two canes or two crutches and two lower-extremity braces (either AFOs or KAFOs) k. Wheelchair dependent 	<p>50%</p> <p>60%</p> <p>70%</p> <p>80%</p>

Thigh Atrophy Calculation

Table 17-6 Impairment Due to Unilateral Leg Muscle Atrophy

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

Muscle Strength Calculation

Table 17-8 Impairment Due to 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)	4 (10)	2 (5)
	Extension	15 (37)	15 (37)	15 (37)	7 (17)
	Abduction*	25 (62)	25 (62)	15 (27)	10 (25)
Knee	Flexion	10 (25)	10 (25)	7 (17)	5 (12)
	Extension	10 (25)	10 (25)	7 (17)	5 (12)
Ankle	Flexion (plantar flexion)	15 (37) [53]	15 (37) [53]	10 (25) [35]	7 (17) [24]
	Extension (dorsiflexion)	10 (25) [35]	10 (25) [35]	10 (25) [35]	5 (12) [17]
	Inversion	5 (12) [17]	5 (12) [17]	5 (12) [17]	2 (5) [7]
Great toe	Extension	3 (7) [10]	3 (7) [10]	3 (7) [10]	1 (2) [3]
	Flexion	[17]	[17]	[17]	2 (5) [7]

* Hip adduction weakness is evaluated as an obturator nerve impairment (see Table 17-37).

Range of Motion Impairment

Table 17 -10

Motion	Mild	Moderate	Severe
	10 LE	20 LE	35 LE
Flexion	<110 degrees	<80 degrees	< 60 degrees + 2 per 10 degrees < 60
Flexion Contracture (Extension)	5-9 degrees	10-19 degrees	20+ degrees

Arthritis Calculation

Table 17-31 Arthritis Impairments Based on Roentgenographically Determined Cartilage Intervals

Joint	Whole Person (Lower Extremity) [Foot] Impairment (%)				
	Cartilage Interval				
	3 mm	2 mm	1 mm	0 mm	
Sacroiliac (3 mm)*	—	1 (2)	3 (7)	3 (7)	3 (7)
Hip (4 mm)	3 (7)	8 (20)	10 (25)	20 (50)	20 (50)
Knee (4 mm)	3 (7)	8 (20)	10 (25)	20 (50)	20 (50)
Patellofemoralt	—	4 (10)	6 (15)	8 (20)	8 (20)
Ankle (4 mm)	2 (5) [7]	6 (15) [21]	8 (20) [28]	12 (30) [43]	12 (30) [43]
Subtalar (3 mm)	—	2 (5) [7]	6 (15) [21]	10 (25) [35]	10 (25) [35]
Talonavicular (2-3 mm)	—	—	4 (10) [14]	8 (20) [28]	8 (20) [28]
Calcaneocuboid	—	—	4 (10) [14]	8 (20) [28]	8 (20) [28]
First metatarsophalangeal	—	—	2 (5) [7]	5 (12) [17]	5 (12) [17]
Other metatarsophalangeal	—	—	1 (2) [3]	3 (7) [10]	3 (7) [10]

* Normal cartilage intervals are given in parentheses.

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

DBE Calculation

Table 17-33 Impairment Estimates for Certain Lower Extremity Impairments

Region and Condition	Whole Person (Lower Extremity) [Foot] Impairment (%)	Region and Condition	Whole Person (Lower Extremity) [Foot] Impairment (%)
Pelvis*			
Pelvic fracture Undisplaced, nonarticular, healed, without neurologic deficit or other sign	0	Knee Patellar subluxation or dislocation with residual instability	3 (7)
Displaced nonarticular fracture: estimate by evaluating shortening and weakness	—	Patellar fracture Undisplaced, healed	3 (7)
Acetabular fracture: estimate according to range of motion and joint changes	—	Articular surface displaced more than 3 mm	5 (12)
Sacroiliac joint fracture: consider displacement	1-3 (2-7)	Displaced with nonunion	7 (17)
Ischial bursitis (weaver's bottom) requiring frequent unweighting and limiting of sitting time	3 (7)	Patellectomy Partial	3 (7)
		Total	9 (22)
		Meniscectomy, medial or lateral Partial	1 (2)
		Total	3 (7)
Hip			
Total hip replacement; includes endoprosthesis, unipolar or bipolar Good results, 85-100 pointst	15 (37)	Meniscectomy, medial and lateral Partial	4 (10)
Fair results, 50-84 pointst	20 (50)	Total	9 (22)
Poor results, less than 50 pointst	30 (75)	Cruciate or collateral ligament laxity Mild	3 (7)
Femoral neck fracture, healed in Good position	Evaluate according to examination findings	Moderate	7 (17)
		Severe	10 (25)

Appendix B – Knee Problem Handout

Read the following report dated 9/28/05 and answer the following:

What are the different knee impairments indicated by the doctor in this report?

Rate all the non-gait knee impairments (AMA Guides pages 530, 544, 546)

Using table 17-2 on AMA Guides page 526 combine the impairments as appropriate. Then adjust for disability.

Rate the gait impairment (AMA Guides page 529)

State reasons why or why not gait should be used in this case.

Rate the sleep arousal impairment found on page four of the report using page 317 of the Guides.

Do you feel sleep arousal impairment rating is applicable in this case? Why or why not? How else might the doctor have handled any impairment due to difficulty sleeping?

Occupation Food Server 3

Age 41

Appendix C – Sample Medical Report

Diplomates, American Board of Orthopedic Surgery
Fellows, American Academy of Orthopedic Surgeons

Please send all correspondence to Oxnard

September 28, 2005

[REDACTED]
Post Office Box 85488
San Diego, CA 92186

Attention: [REDACTED]

REGARDING:
DATE(S) OF INJURY:
EMPLOYER:
CLAIM#:
WCAB#:
DATE OF EXAMINATION:
008

[REDACTED]
September 22, 2005

10/15/02

PRIMARY TREATING PHYSICIAN'S PERMANENT AND STATIONARY REPORT

Dear [REDACTED]:

[REDACTED] returns to the office today for orthopedic re-evaluation. A Spanish-English interpreter was present during the evaluation.

Prolonged services totaling 30 minutes were provided today for the purpose of research, reviewing the patient's medical file, reviewing supplemental medical records, and dictation for preparation of report.

The patient continues to have significant pain in the left knee region. She does have a significantly large osteochondral defect of the medial femoral condyle. She also has grade IV changes. There is grade IV arthritis of the lateral tibial plateau and lateral femoral condyle.

RE: [REDACTED]
DE: September 22, 2005
Page Two

PHYSICAL EXAMINATION

On examination she has diffuse pain throughout ranges of motion of the knee. She has a positive effusion of the knee. She has pain at about 90 degrees but I am able to get it a little bit further.

X-RAYS

LEFT KNEE: Demonstrate narrowing of the joint space, both medially and laterally.

MEASUREMENTS

The patient is right-hand-dominant. Measurements were obtained today and read as follows:

<u>Lower Extremities</u>	<u>Right</u>	<u>Left</u>
Leg Lengths	83	83
Quadriceps	48	46
Calves	35	34
Knees	35	36

DIAGNOSIS

1. Left knee arthritis with osteochondral defect, medial femoral condyle.
2. Status post left knee arthroscopy osteochondral microfracture of the medial femoral condyle and partial lateral meniscectomy - 12/9/04.

DISCUSSION

To recap, this patient fell at work on June 10, 2004 sustaining injury to her left knee. She has undergone treatment including diagnostic testing, medications, therapies, bracing, surgery, and injections including three

RE: [REDACTED]
DE: September 22, 2005
Page Three

Synvisc injections. She remains with significant disability. She ambulates with the assistance of a cane. She reports constant pain. She has pain at night which disrupts her ability to sleep.

The patient does not desire a total knee arthroplasty at this point in time. She has reached maximum medical improvement. She is Permanent and Stationary with the following factors of disability.

SUBJECTIVE FACTORS OF DISABILITY

The patient complains of basically constant slight pain increasing to moderate to severe when standing for long periods of time, squatting, stooping, bending and kneeling in the left knee.

OBJECTIVE FINDINGS OF DISABILITY

She does have narrowing of the joint space. She has a large 8.0 mm osteochondral defect. She has grade IV arthritis in the lateral joint as well as the trochlea. She also is required to walk with a cane. She is status post surgery. There is left-sided atrophy as noted of 2 cm of the quadriceps and 1 cm of the calf.

WORK RESTRICTIONS

The patient has a disability which limits her to semi-sedentary work.

AMA IMPAIRMENT RATINGS

The patient has 2.0 mm interval seen on the lateral aspect of the left knee, per Table 17-31, Page 544. She has mild range of motion loss as per Table 17-10, page 537.

She will be rated on antalgic gait, Table 17-5, page 529. She has documentation to fit the criteria for Mild, category "c"

RE: [REDACTED]
DE: September 22, 2005
Page Four

for use of a cane. Based on gait derangement, she has [REDACTED] whole person impairment.

Due to the orthopedic condition, she has described pain and frequent wakening at night, difficulty sleeping, difficulty getting into a comfortable position, and this has caused the patient to experience some relative difficulties with the activities of daily living because of the feeling and sensation of chronic fatigue. This is described in the Guide on page 317, Table 13-4. The patient is in a Class I impairment with a 1 - 9% whole person impairment, due to these difficulties. In my medical judgment, this patient has a 9% whole person impairment, directly due to the orthopedic injuries.

Going to the Combined Values Chart, she has [REDACTED] total whole person impairment.

FUTURE MEDICAL CARE

I recommend the patient have a left knee total knee arthroplasty at the appropriate time when she desires to have this. She should have physician visits, injections, medications, durable medical equipment, therapies.

VOCATIONAL REHABILITATION

She cannot return to her usual and customary work as a Food Server. She is a Qualified Injured Worker.

APPORTIONMENT

Apportionment is not indicated in this patient's case. She is only 43 years old. She should not have this significant amount of arthritic changes in the knee. She did have an injury on July 10, 2004. She does not recollect any other injuries to her left knee. 100% of her disability is due to that date of injury.