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

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

Table 15-4 Criteria for Rating Impairment Due to Thoracic Spine Injury

DRE Thoracic Category I 0% Impairment of the Whole Person	DRE Thoracic Category II 5%-8% Impairment of the Whole Person	DRE Thoracic Category III 15%-18% Impairment of the Whole Person	DRE Thoracic Category IV 20%-23% Impairment of the Whole Person	DRE Thoracic Category V 25%-28% Impairment of the Whole Person
No significant clinical findings, no observed muscle guarding, no documentable neurologic impairment, no documented changes in structural integrity, and no other indication of impairment related to injury or illness; no fractures	History and examination findings are compatible with a specific injury or illness; findings may include significant muscle guarding or spasm observed at the time of the examination, asymmetric loss of range of motion (dysmetria), or nonverifiable radicular complaints, defined as complaints of radicular pain without objective findings; no alteration of motion segment integrity ***or*** herniated disk at the level and on the side that would be expected from objective clinical findings, but without radicular signs following conservative treatment ***or*** fractures: (1) less than 25% compression of one vertebral body; (2) posterior element fracture without dislocation that has healed without alteration of motion segment integrity or radiculopathy; (3) a spinous or transverse process fracture with displacement, but without a vertebral body fracture	Ongoing neurologic impairment of the lower extremity related to a thoracolumbar injury, documented by examination of motor and sensory functions, reflexes, or findings of unilateral atrophy above or below the knee related to no other condition; impairment may be verified by electrodiagnostic testing ***or*** clinically significant radiculopathy, verified by an imaging study that demonstrates a herniated disk at the level and on the side that would be expected from objective clinical findings; history of radiculopathy, which has improved following surgical treatment ***or*** fractures: (1) 25% to 50% compression fracture of one vertebral body; (2) posterior element fracture with mild displacement disrupting the canal; in both cases the fracture has healed without alteration of structural integrity; differentiation from a congenital or developmental condition should be accomplished, if possible, by examining preinjury roentgenograms, if available, or by a bone scan performed after the onset of the condition	Alteration of motion segment integrity or bilateral or multilevel radiculopathy; alteration of motion segment integrity is defined from flexion and extension radiographs as translation of one vertebra on another of more than 2.5 mm; radiculopathy as defined in thoracic category III need not be present if there is alteration of motion segment integrity; if an individual is to be placed in DRE thoracic category IV due to radiculopathy, the latter must be bilateral or involve more than one level ***or*** fractures: (1) more than 50% compression of one vertebral body without residual neural compromise	Impairment of the lower extremity as defined in thoracolumbar category III and loss of structural integrity as defined in thoracic category IV ***or*** fractures: (1) greater than 50% compression of one vertebral body with neural motor compromise but not bilateral involvement that would qualify the individual for corticospinal tract evaluation

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

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

Table 15-7 Criteria for Rating Whole Person Impairment Percent Due to Specific Spine Disorders to Be Used as Part of the ROM Method*

Disorder	% Impairment of the Whole Person		
	Cervical	Thoracic	Lumbar
I. Fractures			
A. Compression of one vertebral body.			
0%-25%	4	2	5
26%-50%	6	3	7
> 50%	10	5	12
B. Fracture of posterior element (pedicle, lamina, articular process, transverse process).	4	2	5
Note: An impairment due to compression of a vertebra and one due to fracture of a posterior element are combined using the Combined Values Chart (p. 604). Fractures or compressions of several vertebrae are combined using the Combined Values Chart.			
C. Reduced dislocation of one vertebra.	5	3	6
If two or more vertebrae are dislocated and reduced, combine the estimates using the Combined Values Chart.			
An unreduced dislocation causes impairment until it is reduced; the physician should then evaluate the impairment on the basis of the individual's condition with the dislocation reduced.			
If no reduction is possible, the physician should evaluate the impairment on the basis of the range-of-motion and neurologic findings according to criteria in this chapter and Chapter 13, The Central and Peripheral Nervous System.			
II. Intervertebral disk or other soft-tissue lesion			
Diagnosis must be based on clinical symptoms and signs and imaging information.			
A. Unoperated on, with no residual signs or symptoms.	0	0	0
B. Unoperated on, with medically documented injury, pain, and rigidity* associated with none to minimal degenerative changes on structural tests.†	4	2	5
C. Unoperated on, stable, with medically documented injury, pain, and rigidity* associated with moderate to severe degenerative changes on structural tests;† includes herniated nucleus pulposus with or without radiculopathy.	6	3	7
D. Surgically treated disk lesion without residual signs or symptoms; includes disk injection.	7	4	8
E. Surgically treated disk lesion with residual, medically documented pain and rigidity.	9	5	10
F. Multiple levels, with or without operations and with or without residual signs or symptoms.	Add 1% per level		
G. Multiple operations *with* or without residual signs or symptoms			
1. Second operation	Add 2%		
2. Third or subsequent operation	Add 1% per operation		
III. Spondylolysis and spondylolisthesis, not operated on			
A. Spondylolysis or grade I (1%-25% slippage) or grade II (26%-50% slippage) spondylolisthesis, accompanied by medically documented injury that is stable, and medically documented pain and rigidity with or without muscle spasm.	6	3	7
B. Grade III (51%-75% slippage) or grade IV (76%-100% slippage) spondylolisthesis, accompanied by medically documented injury that is stable, and medically documented pain and rigidity with or without muscle spasm.	8	4	9
IV. Spinal stenosis, segmental instability, spondylolisthesis, fracture, or dislocation, operated on			
A. Single-level decompression without spinal fusion and without residual signs or symptoms	7	4	8
B. Single-level decompression without spinal fusion with residual signs or symptoms	9	5	10
C. Single-level spinal fusion with or without decompression without residual signs or symptoms	8	4	9
D. Single-level spinal fusion with or without decompression with residual signs and symptoms	10	5	12
E. Multiple levels, operated on, with residual, medically documented pain and rigidity.	Add 1% per level		
1. Second operation	Add 2%		
2. Third or subsequent operation	Add 1% per operation		

* The phrase "medically documented injury, pain, and rigidity" implies not only that an injury or illness has occurred but also that the condition is stable, as shown by the evaluator's history, examination, and other diagnostic data, and that a permanent impairment exists, which is at least partially due to the condition being evaluated.

† Structural tests include radiographs, myelograms with and without CT scan, CT scan and MRI with and without contrast, and diskogram with and without CT scan.

Table 15-8 Impairment Due to Abnormal Motion of the Lumbar Region: Flexion and Extension*

The proportion of flexion and extension of total lumbosacral motion is 75%.

Sacral (Hip) Flexion Angle (°)	True Lumbar Spine Flexion Angle (°)	% Impairment of the Whole Person
45+	60+	0
	45	2
	30	4
	15	7
	0	10
30-45	40+	4
	20	7
	0	10
0-29	30+	5
	15	8
	0	11

True Lumbar Spine Extension From Neutral Position (0°) to:	Degrees of Lumbosacral Spine Motion		% Impairment of the Whole Person
	Lost	Retained	
0	25	0	7
10	15	10	5
15	10	15	3
20	5	20	2
25	0	25	0

* Use this table only if the sum of sacral (hip) flexion and sacral (hip) extension is within 15° of the straight-leg-raising test on the tighter side; see text.

Table 15-9 Impairment Due to Abnormal Motion and Ankylosis of the Lumbar Region: Lateral Bending

Abnormal Motion
Average range of left and right lateral bending is 50°; the proportion of total lumbosacral motion is 40% of the total spine.

a.	Left Lateral Bending From Neutral Position (0°) to:	Degrees of Lumbosacral Motion		% Impairment of the Whole Person
		Lost	Retained	
	0	25	0	5
	10	15	10	3
	15	10	15	2
	20	5	20	1
	25	0	25	0
b.	Right Lateral Bending From Neutral Position (°) to:	Degrees of Lumbosacral Motion		% Impairment of the Whole Person
		Lost	Retained	
	0	25	0	5
	10	15	10	3
	15	10	15	2
	20	5	20	1
	25	0	25	0
c.	Ankylosis Region Ankylosed at (°):			
	0 (neutral position)			10
	30			20
	45			30
	60			40
	75 (full flexion)			50

Table 15-15 Determining Impairment Due to Sensory Loss

a. Classification		
Grade	**Description of Sensory Deficit**	**% Sensory Deficit**
5	No loss of sensibility, abnormal sensation, or pain	0
4	Distorted superficial tactile sensibility (diminished light touch), with or without minimal abnormal sensations or pain, that is forgotten during activity	1-25
3	Distorted superficial tactile sensibility (diminished light touch and two-point discrimination), with some abnormal sensations or slight pain, that interferes with some activities	26-60
2	Decreased superficial cutaneous pain and tactile sensibility (decreased protective sensibility), with abnormal sensations or moderate pain, that may prevent some activities	61-80
1	Deep cutaneous pain sensibility present; absent superficial pain and tactile sensibility (absent protective sensibility), with abnormal sensations or severe pain, that prevents most activity	81-99
0	Absent sensibility, abnormal sensations, or severe pain that prevents all activity	100

b. Procedure	
1.	Identify the area of involvement using the dermatome charts (Figures 15-1 and 15-2).
2.	Identify the nerve(s) that innervate the area(s) (Table 16-12 and Figure 16-48).
3.	Grade the severity of the sensory deficit or pain according to the classification above.
4.	Find the maximum impairment of the extremity(ies) due to sensory deficit or pain for each: spinal nerves (Table 15-8) and brachial plexus (Table 16-14).
5.	Multiply the severity of the sensory deficit by the maximum impairment value to obtain the extremity impairment for each spinal nerve involved.

Table 15-16 Determining Impairment Due to Loss of Power and Motor Deficits

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, extension, etc.
2.	Identify the muscle(s) performing the motion and the spinal nerve(s) involved.
3.	Grade the severity of motor deficit of individual muscles according to the classification given above.
4.	Find the maximum impairment of the extremity due to motor deficit for each spinal nerve structure involved (Tables 15-18, 16-11, 16-13, and 17-37).
5.	Multiply the severity of the motor deficit by the maximum impairment value to obtain the extremity impairment for each spinal nerve involved.

* Adapted from Medical Research Council.[16]

Table 15-17 Unilateral Spinal Nerve Root Impairment Affecting the Upper Extremity*

Nerve Root Impaired	Maximum % Loss of Function Due to Sensory Deficit or Pain	Maximum % Loss of Function Due to Strength
C5	5	30
C6	8	35
C7	5	35
C8	5	45
T1	5	20

* For description of the process of determining impairment percent, see text.

Table 15-18 Unilateral Spinal Nerve Root Impairment Affecting the Lower Extremity*

Nerve Root Impaired	Maximum % Loss of Function Due to Sensory Deficit or Pain	Maximum % Loss of Function Due to Strength
L3	5	20
L4	5	34
L5	5	37
S1	5	20

* For description of the process of determining impa[illegible]rcent, see text.

COMBINED VALUES CHART

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
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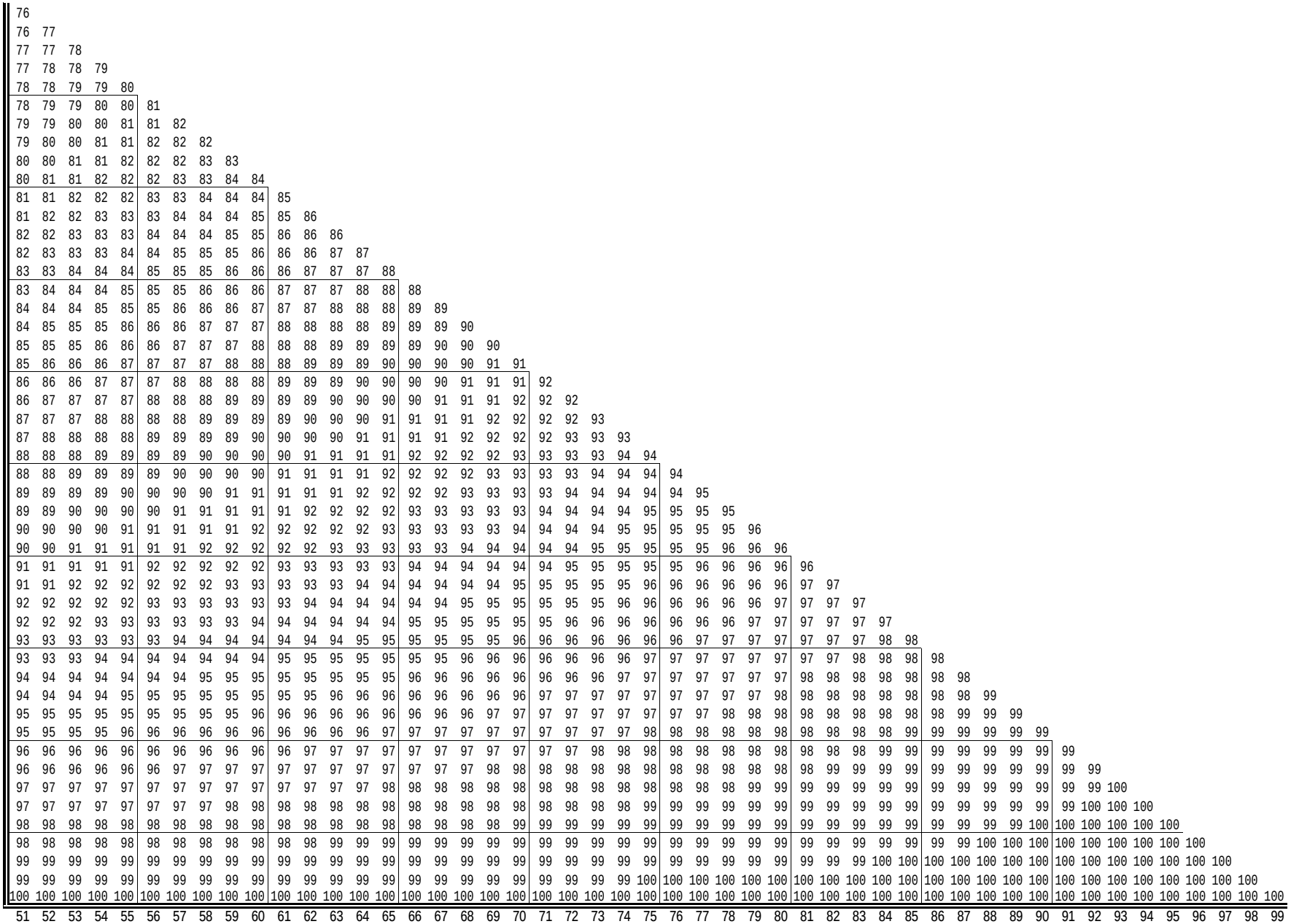
COMBINED VALUES CHART (CON'T)

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