

## Severity

*The physician is expected to offer an opinion about the severity of any musculoskeletal condition. Issues of possible malingering and illness behavior must also be factored in. The entire process, however, is far from an exact science.*

Generally, there are two approaches to evaluating the severity of musculoskeletal conditions. They are: 1) the amount of tissue damage and 2) the effect on the patient. The amount of tissue damage is most useful in trauma cases when there are clear signs of bruising or inflammation, or when there is structural instability in an extremity.

Obviously, the degree of tissue damage is more difficult to ascertain in headaches or low back or thoracic pain, especially when the injury is the result of posture or repetitive microtrauma. It is also difficult to evaluate in chronic pain cases. In these situations, judging the effect on the patient, although indirect, is easier and more commonly practiced. Often the physician uses both sets of criteria to arrive at an opinion.

## Amount of Tissue Damage

A number of different systems have been proposed to assess severity, based on the type of injury and area of the body. The following represents several examples of ways in which severity can be determined.

**Grading strains** (i.e., muscle or tendon damage)<sup>1-3</sup> should be done as follows:

### Grade 1 Strain

- Pain with resistance
- Little or no weakness
- No defect
- Minimal swelling and bruising

- No pain with PROM except when muscle is passively stretched

### Grade 2 Strain

- Pain with resistance
- Mild to moderate weakness
- Possible small defect
- Moderate swelling and bruising
- Pain with passive stretching (otherwise PROM is pain-free)

### Grade 3 Strain

- Pain/no pain with resistance
- Moderate to severe weakness
- Larger defect possible
- Rapid and extensive bruising and/or swelling
- Muscle balls up, retracts, loses contour

**Note:** If there is a palpable defect, assume grade 3 until proven otherwise.

**Grading sprains** (i.e., ligament damage)<sup>4-7</sup> should be done as follows:

### 1<sup>st</sup> Degree/Mild Sprain

- Pain on stress of tissue only at end range
- No pain with isometric muscle testing
- Local tenderness
- Mild local swelling
- No gross instability
- Minimal pain with weight bearing

**2<sup>nd</sup> Degree/Moderate Sprain** (sometimes divided into grades I and II)

- Pain on stress of tissue (before end range)

- No pain with isometric muscle testing (or mild pain during the initial “set” phase)
- Generalized and marked tenderness and swelling
- Mild laxity—no gross instability
- Localized bruising
- Moderate to marked ROM loss
- Moderate to severe pain with weight bearing.

### **3<sup>rd</sup> Degree/Severe Sprain**

- Gross instability
- Variable response to isometric muscle testing: no pain; pain during initial “set” phase; or significant weakness
- Generalized swelling
- Disruption of tissue
- Pain ranges from minimal to severe
- Possible hemarthrosis and extensive bruising
- Marked ROM loss
- Abnormal motion and/or pain with muscle contraction.

**Note:** The grading schemes cited above are easier to apply to *extremity* problems and some *neck* injuries.

### **Assessing Neurologic Damage**

Severity of neurologic damage is usually based on the type of deficit. Cauda equina signs and symptoms are considered extremely significant and require emergency or urgent referral. Significant muscle weakness or atrophy would usually be considered severe; milder muscle weakness, absence of reflex or sensation would be considered moderate; diminished sensation or reflex would be considered mild. The following is one approach to assessing the severity of the radiculopathy associated with lumbar disc herniations:<sup>8</sup>

- Mild loss: sensory, with or without a loss of one motor grade; with typical improvement in 6-12 weeks.

- Moderate loss: absence of deep tendon reflex (DTR) with more than one grade of motor loss; typically with complete recovery within 3-6 months; gradual motor recovery over that time. (a grade 0 DTR will rarely return).
- Severe loss: motor loss to a grade 3 or below; with full recovery often taking a year, and occasionally with only partial recovery.

In the case of cervical cord compression secondary to stenosis or other degenerative changes, the following classification system can be used.

### **Disability Classification of Cervical Spondylotic Myelopathy**<sup>9</sup>

- Grade 0: Root signs and symptoms, no cord involvement
- Grade I: Signs of cord involvement, normal gait
- Grade II: Mild gait involvement, able to be employed
- Grade III: Gait abnormality, able to be employed
- Grade IV: Able to ambulate only with assistance
- Grade V: Chairbound or bedridden

### **Whiplash (Quebec classification)**<sup>10</sup>

- Grade 0: No complaint of neck problems. No physical signs.
- Grade 1: Complaint of neck pain, stiffness, or tenderness only. No physical signs (e.g., decreased gross ROM, point tenderness).
- Grade 2: Neck complaint and musculoskeletal signs (e.g., decreased gross ROM, point tenderness).
- Grade 3: Neck complaint and neurologic signs (deficits).
- Grade 4: Neck complaint and fracture or dislocation.

## Effect on Patient

A second approach to assessing the severity of a condition is to look at its effect on the patient. There are a variety of ways to do this. This protocol looks at ADLs and the use of pain measurement scales.

### Activities of Daily Living (ADLs)

How the condition affects the patient's ADLs is commonly used to assess severity and must *always* be factored into personal injury and worker's compensation cases. This assessment is particularly useful in the majority of low back, thoracic, and most cervical cases and is also commonly applied to extremities.

*In general, functional impairment is considered a more useful indicator of severity than pain levels alone.*

The score derived from an Oswestry or other functional questionnaires can be used to reflect severity. (**Note:** A very high Oswestry score such as 80-100 may indicate symptom amplification.)

### Worker's Compensation and Other Medicolegal Cases

Worker's compensation has its own specific criteria for when the terms mild, moderate, or severe can be used. The board in the state or province in which you practice may have its own definitions for intensity of signs and symptoms. *If so, you must use their working definitions.* The following definitions are intended for use in impairment ratings but may be applied in other medicolegal settings as well.

- Minimal: The signs or symptoms constitute an annoyance but cause no impairment in the performance of a particular activity.
- Slight: The signs or symptoms can be tolerated but would cause some impairment in the performance of an activity that precipitates them.
- Moderate: The signs or symptoms would cause marked impairment in the performance of an activity that precipitates them.
- Marked: The signs or symptoms preclude any activity that precipitates them.<sup>11</sup>

### Lumbar Disc Herniations with Radiculopathy

Although there is no commonly agreed on rating system for assessing the severity of lumbar disc herniations with radiculopathy, the following pain and functional evaluation may be useful.<sup>8</sup>

- Mild: Patient is working; may be using NSAIDs; limited ADL.
- Moderate: Patient is working part-time/partial capacity; oral medication; unable to care for home.
- Severe: Unable to work; comfortable in recumbent position only.

### Pain

Patient's self reporting on a pain scale (e.g., VAS, m-VAS), pain questionnaire (e.g., McGill), or amount of analgesics can be used to estimate severity. However, evaluation of effect on activities of daily living should *always* be done in conjunction with pain assessment.

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- <sup>11</sup>AMA Guides to the Evaluation of Permanent Impairment, 3<sup>rd</sup> edition, 1988 p 236 **[VA2 based on standards of care]**