

Motor Level of Injury. The strength of five key muscle groups in the upper extremities and five in the lower extremities is tested bilaterally to determine the motor level of injury (Table 4.) Provide resistance to the movement of muscle groups in both directions and assess for any indication of diminished strength.^{29,31} Muscle strength graded using a 6-point score (0 to 5):

0/5 = Total paralysis

1/5 = Palpable or visible contraction

2/5 = Active movement, full range of motion (ROM) with gravity eliminated

3/5 = Active movement, full ROM against gravity

4/5 = Active movement, full ROM against gravity and moderate resistance in a muscle specific position

5/5 = Active movement, full ROM against gravity and full resistance in a functional muscle position, normal for an otherwise unimpaired person

NT = Not testable (e.g., immobilization, severe pain prevents grading, limb amputation, or contracture of greater than 50 percent of the normal ROM)

An asterisk "*" tag is added to 0, 1, 2, 3, 4 or NT (e.g., the only abnormal indicators) when an impairment is due to a non-SCI condition in the ASIA worksheet.

Additional Guidance:

- Assign a score for each key muscle group of the right and left upper and lower extremities.
- Complete the motor assessment by evaluating the contraction of the external anal sphincter around the examiner's finger. Scoring is reported as present or absent *voluntary anal contraction*.
- The normal motor level on each side is determined by a minimum score of 3, with all the proximal key muscle groups being 5 (normal.)
- The overall motor level score is the last normal for both (a minimum of 3 bilaterally.) If for any reason the motor level cannot be tested or determined, the motor level score is considered to be the same as the sensory level score.

Table 4. Key muscle groups for the upper and lower extremities with corresponding neurologic level and muscle movement(s)

Extremity	Root Level	Muscle Group	Muscle Movement(s)
UPPER	C5	Elbow flexors	Shoulder: Flexion, extension, abduction, adduction, internal and external rotation Elbow: Supination
	C6	Wrist extensors	Elbow: Pronation Wrist: Flexion
	C7	Elbow extensors	Finger: Flexion at proximal joint, extension Thumb: Flexion, extension and abduction in plane of thumb
	C8	Long finger flexors	Finger: Flexion at metacarpophalangeal (MCP) joint Thumb: Opposition, adduction and abduction perpendicular to palm
	T1	Small finger abductor	Finger: Abduction of the index finger
LOWER	L2	Hip flexors	Hip: Adduction
	L3	Knee extensors	Hip: External rotation
	L4	Ankle dorsiflexors	Hip: Extension, abduction, internal rotation Knee: Flexion Ankle: Inversion and eversion Toe: Metatarsophalangeal (MP) and interphalangeal (IP) joint extension
	L5	Long toe extensors	Hallux and Toe: Distal and proximal interphalangeal joints (DIP and PIP) flexion and abduction
	S1	Ankle plantar flexors	Hallux: Adduction