

What does the ASIA Impairment Scale (AIS) grade mean?

Another important result of this exam is the ASIA Impairment Scale which grades the severity of injury to your spinal cord:

A: COMPLETE. No muscle movement, light touch, pin prick, or pressure feelings are present in or around your anus.

B: SENSORY INCOMPLETE. Feeling is present in or around your anus. There might be a few muscle movements preserved below your neurological level of injury but only in the first adjacent segments.

C: MOTOR INCOMPLETE. You can move some muscles well below your neurological level of injury, but many are not strong enough to lift against gravity.

D: MOTOR INCOMPLETE. Muscle strength in most muscles below your neurological level of injury are strong enough to lift against gravity.

E: NORMAL. The tested sensation and muscle movements have returned to normal. Impaired feelings or movements might still be present, but cannot be detected with the exam.

When is an injury called 'complete' or 'incomplete'?

The difference in definition of a clinically complete or incomplete injury is based on the presence of muscle and/or sensory functions in and around the anus. This reflects whether motor and/or sensory messages are able to travel to the lowest level of your spinal cord. An injury is classified as 'complete' (ASIA Impairment Scale grade A) when there is no muscle movement or feeling in or around the anus. This means that even though you may have some movement and/or sensation below your neurological level of injury, the motor and sensory messages are not able to travel to the lowest level of your spinal cord. If feelings and/or muscle movement are present in or around the anus your injury is called 'incomplete' (can be ASIA Impairment Scale grade B, C, or D), since some motor and/or sensory messages are able to travel to the lowest level of your spinal cord.

What is the ISNCSCI Exam?

Often called the ASIA Exam

The diagram shows the ISNCSCI exam form for the right side of the body. It includes a table for recording results for Motor Key Muscles, Sensory Key Sensory Points (Light Touch (LTR), Pin Prick (PPR)), and Voluntary Anal Contraction (VAC). The table is organized by spinal level (C2-C8, T2-T12, L1-L5, S1-S5) and muscle groups (UER, LER). A human figure is shown with key sensory points marked on the face, arms, and legs.

| RIGHT | | MOTOR KEY MUSCLES | | SENSORY KEY SENSORY POINTS | |
|---|----------------------------------|-------------------|--|----------------------------|-----------------|
| | | | | Light Touch (LTR) | Pin Prick (PPR) |
| | | C2 | | | |
| | | C3 | | | |
| | | C4 | | | |
| UER (Upper Extremity Right) | Elbow flexors | C5 | | | |
| | Wrist extensors | C6 | | | |
| | Elbow extensors | C7 | | | |
| | Finger flexors | C8 | | | |
| | Finger abductors (little finger) | T1 | | | |
| Comments (Non-key Muscle? Reason for NT? Pain? Non-SCI condition?): | | T2 | | | |
| | | T3 | | | |
| | | T4 | | | |
| | | T5 | | | |
| | | T6 | | | |
| | | T7 | | | |
| | | T8 | | | |
| | | T9 | | | |
| | | T10 | | | |
| | | T11 | | | |
| | | T12 | | | |
| | | L1 | | | |
| LER (Lower Extremity Right) | Hip flexors | L2 | | | |
| | Knee extensors | L3 | | | |
| | Ankle dorsiflexors | L4 | | | |
| | Long toe extensors | L5 | | | |
| | Ankle plantar flexors | S1 | | | |
| | | S2 | | | |
| | | S3 | | | |
| | | S4-5 | | | |
| (VAC) Voluntary Anal Contraction (Yes/No) <input type="checkbox"/> | | RIGHT TOTALS | | (50) | (56) |

Helpful tips for a correct exam

- The test usually takes 30 min. to one hour to complete and requires you to concentrate. Please ask for breaks when needed.
- Please follow the instructions of the examiner carefully and ask if you have not fully understood the instructions.
- You will be asked to close your eyes at times.
- When you are unsure about the feeling of the cotton swab or the safety pin on your face, please ask the examiner to demonstrate on your face again.
- You will be asked to *try* to move your arms and legs, even if you think you cannot move them.
- If you are not sure if you can or cannot feel the safety pin or cotton swab, please do not guess. Tell the examiner that you are not sure, so that the testing can be repeated and will be accurate.



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What individuals with spinal cord injury should know about the exam



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What is the ISNCSCI?

The International Standards for Neurological Classification of Spinal Cord Injury (ISNCSCI) is a standardized neurological examination used for two purposes: First, to determine the level below which feeling (sensation) and movement (motor function) are impaired. Second, to assess the extent (severity) of damage to your spinal cord. For this, an examiner will test where on your body you can feel and which muscles you can move. Based on the examination results, the neurological level of injury (below which you do not have normal feeling and movement) and an overall ASIA Impairment Scale (AIS) grade (which classifies the severity of your injury) are determined. These help you and your healthcare providers to better understand your injury and to track possible changes over time with follow-up examinations.

Who will perform the exam?

Qualified medical professionals will usually perform the exam. They will follow a set of steps in order to do this accurately.

How is the exam done?

The International Standards for Neurological Classification of Spinal Cord Injury includes a sensory exam, a muscle strength exam, and a test for any preserved sensory or voluntary motor function at the anus / rectum. You will be lying on your back during most of the exam. You may be asked to roll or to be rolled to the side when the feeling is tested on your buttocks and when the neurological exam of the anal region is performed.

SENSORY EXAM: Your feeling will be tested from head to foot at predefined skin areas on both sides of your body with a cotton swab and a safety pin. The examiner will first show you on your face what each of these feels like. The feeling in your affected body parts might be very different from the feeling in your face, e.g. numb, tingling, or even more sensitive than usual.

LIGHT TOUCH: You will be asked when you feel the touch of the cotton swab, and how it compares to the feeling on your face.

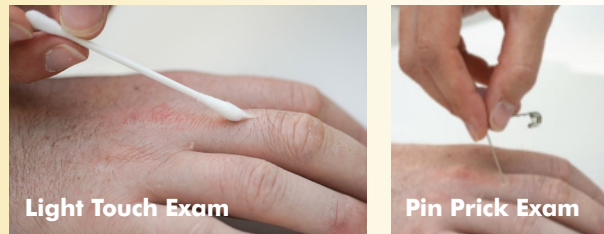
PIN PRICK: You will first be asked if you can tell the difference between the sharp and the rounded (dull) end of a safety pin. If this is true, you will be asked how the pin sensation compares to how it feels on your face.

The light touch and pin prick sensation in each area tested will be scored on a 3-point scale as normal (2), altered (1; present but not normal), or absent (0).

MOTOR EXAM: The strength of five movements in each arm and each leg will be examined and scored on a 6-point scale from absent (0) to normal for you (5). Depending on the muscle and its strength the testing position might differ. You might also be asked to try to move other arm and leg muscles.

ANORECTAL EXAM: This is a very important exam that is needed to determine the completeness of your injury. The examiner will check if you have sensation around or in the anus, and will test if you can squeeze the anal muscles. For this the examiner will need to insert the tip of a finger in your anus.

These exam scores are used to determine the neurological level of injury and the ASIA Impairment Scale grade, which are explained in the following sections.



What does the neurological level of injury mean?

The neurological level of injury represents the lowest level in your spinal cord down to which sensation and muscle function is normal. For example, if it is stated that someone has a “T1 injury” or “T1 level”, it is meant that the feeling and movement in all segments from the neck down to the first segment in the thoracic region of the spinal cord (T1) are normal and that the function in the second thoracic level (T2) and below are not normal. Of note, in traumatic injuries the bony and neurological level of injury may differ.

This particularly applies to fractures of thoracic or lumbar vertebrae where the spinal roots exit the spinal cord at a higher level than the spinal column.

