

Semmes Weinstein Monofilaments:

This discriminative test is used to assess the threshold stimulus necessary for perception of light touch to deep pressure. The assessment requires the use of monofilaments that are available in either a 5 or 20 piece assessment kit.

Assessment technique:

- Testing should be done in a quiet area with vision occluded.
- The patients hand should be supported on either a towel or therapeutic putty to avoid moving the finger especially when using the larger filaments.
- Instruct the patient to respond when a stimuli is felt saying “Yes” or “Touch”.
- When testing proceed from distal to proximal and from small to large monofilaments.
- It is not necessary to test every area of the skin, checks may be done over areas innervated by different nerves.
- Press the filament at a 90 degree angle for 1.5 seconds against the skin until it bows and then remove.
- Filaments **2.83** and **3.61** are applied three times in each spot. A single response indicates a positive result.
- For filaments **4.31**, **4.56** and **6.65** only apply once.
- When the patient indicates a correct response record using the colour pencil that corresponds to the colour on the handle of the monofilament onto a hand diagram.
- The patient should only be asked when a stimuli is felt and not where they feel it.

Results:

Green	2.83	Normal
Blue	3.61	Diminished light touch
Purple	4.31	Diminished protective sensation
Red	4.56	Loss of protective sensation
Red lines	6.65	Deep pressure sensation only

Interpretation scale for monofilaments using 5 piece hand kit

Two point discrimination:

This test is used to evaluate the perception of either one or two points of touch and to assess the quality of fine discriminative sensation. It is assessed using a small tool with prongs at fixed spacing's from 2mm to 15mm. Should only be used when the skin has sensory return of light touch.

Assessment technique:

- Testing should be done in a quiet area with vision occluded.
- The patients hand should be firmly supported in order to avoid unwanted movement of the fingers.
- Demonstrate to the patient on a normally innervated skin area initially.
- Starting on a 5mm distance between the two points.
- Randomly place either 1 or 2 points parallel to the long axis of the finger along each phalanx until the skin blanches. Start distally and work proximally.
- The patient is asked whether 1 or 2 points has been felt. This should be repeated 10 times in each area.
- If 7/10 responses are correctly identified then the distance is scored.
- If the responses are inaccurate then the distance between the two end points is increased by increments of either 1,2 or 5mm depending on the suspected level of dysfunction.
- Equal pressure must be applied between the two points simultaneously.
- Two point discrimination can be assessed as a static or moving pressure.
- To assess moving pressure – randomly place either 1 or 2 points then maintain contact and move distally.

Results:

Normal	< 6mm
Fair	6-10mm
Poor	11-15mm
Protective	One point perceived
Anaesthetic	No points perceived

Interpretations of scores and normative data based on guidelines set by the American Society of the hand for static testing

Moberg pick up test:

The Moberg test can be used to assess functional sensation rather than threshold sensation. It is quick to perform and gives both the patient and therapist a clear demonstration of functional ability. It can only be used if a reasonable return of sensation has already occurred in the finger tips.

Test equipment:

- 12 small metal objects that require precision grip including: wing nut, screw, key, large nut, large coin, small coin, safety pin, paper clip, square nut, hexagonal nut and a washer.

Assessment technique:

- The objects should be placed along side the container on the side being tested first.
- The patient is asked to pick up the objects one at a time from the table top and place them in the pot as quickly as possible. They should not slide the objects off the table.
- The time and manner of prehension is recorded. Discontinue if the test takes longer than 5 minute making a note of how many objects have been correctly placed.
- Repeat the test with the opposite hand and then repeat this sequence 3 times on each hand.
- The same task is then repeated blindfolded for each hand 3 times.
- The vision occluded section should not be attempted if the sensory deficit is too severe.
- The patients can also be timed for object recognition. Each object is randomly selected and placed in the patients three point grip on the affected side and then asked to identify the item. Repeat this twice until all the objects are identified but allow no longer than 30 seconds per object.

Results:

A comparison between the two hands can be made showing the results as a percentage to demonstrate change with further assessments. The uninjured hand is taken as the norm (100%) therefore if the injured hand is slower the score will be greater than 100%.

T = Test (injured hand)
S = Standard (uninjured hand)

$$\frac{T}{S} \times 100 = \% \text{ Standard time}$$

Shape/Texture identification (STI) test:

This test is a quantitative test used for assessing tactile gnosis. The test is performed according to a standardised procedure and is based on active touch. The test is composed of four separate discs each containing three shapes (Cube, cylinder and hexagon) of different diameters (15mm, 8mm or 5mm). The test also present raised dots in groups of 1, 2 or 3, spaced differently on each disc.

Assessment technique:

- Seat the patient at a table with the template containing the samples of the shapes and textures in front of them.
- Ask the patient to identify the shapes and textures presented, first with the uninjured hand.
- The test is performed using the pulp of either the Index or little finger only requiring a minimal motor element.
- The largest shapes should be used initially and the choice of 3 shapes presented randomly by spinning the disc.
- Repeat with the medium and finally the small shapes, offering each shape only once.
- This should then be repeated with the injured hand using either the index finger for median nerve injuries and little finger for ulnar nerve injuries.
- The disc with the largest spacing of raised dots should then be used and the number of dots should be presented randomly for identification with the uninjured hand.
- Repeat with the medium and finally small spacing of raised dots offering each texture only once and then repeat on the injured hand.

Results:

- If all 3 shapes and textures on the disc are correctly identified the patient scores a point for each giving a potential range from 0-6 on each hand. The norm is taken to be 6 based on testing of 60 control subjects (Rosen and Lundborg, 1998). An increasing score will reflect recovery.