

# WEST-foot™ Terse Manual in English

## General Information

1. The lengths of the filaments may be different.
2. Filaments may not be parallel to one another or may have a slight bend.
3. **If a filament has a sharp bend, return for recalibration.**
4. You may rotate several filaments for faster testing, but please store the instrument with all the filament pointing in the same general direction.
5. If a filament becomes stuck, rotate it in the opposite direction.

## Method to obtain sensation levels

### Rapid Threshold Procedure™

Use a descending threshold procedure (e.g., start at 10 g). Use catch trials (act as if you are stimulating, but don't). Make sure that the patient cannot solve the tactile sensory task using visual information. We enclose a clicker because indicating the interval of potential stimulation helps the patient solve the detection task and eases creation of catch trials. Threshold is not solely determined by the first failure to detect. At the first failure to detect, stimulate with the next more forceful filament. At this point, either the person detects or not. If not, this level is threshold. (The patient has just detected and failed to detect this level.) If detects, proceed to the missed detection level (i.e., one filament lower in force) and stimulate. At this point, either the person detects or not. If not, the threshold is taken as half way between the last twice-detected filament and this twice-missed filament. (The more forceful filament was detected twice, and the less forceful filament was missed twice.) Note, in this case threshold does not correspond to a filament value, but to a value between filaments. If detects, then proceed as if the patient never missed (looking for a new first failure to detect). The Rapid Threshold Procedure works if the patient does not give false positive responses to the catch trails. In experience, it works even if the patient initially gives false positive responses. Otherwise, use some other procedure, for example, The 50 vs. 10 Test™.

### Dos and Don'ts

- Avoid touching the stalks of the filaments, which may affect calibration.
- Excessive heat affects calibration. Keeps filaments off window sills and away from fire.
- Never test open wounds, eyes, mucous membranes, oral cavity or damaged skin.
- Monofilaments may damage newly grafted, transplanted or fragile skin.
- The contacting filament tips should be disinfected between patients.
- The tips and stalks are nylon. Anything that affects nylon is contraindicated.
- Do not place the stalks into a disinfecting solution – just the contacting tips.

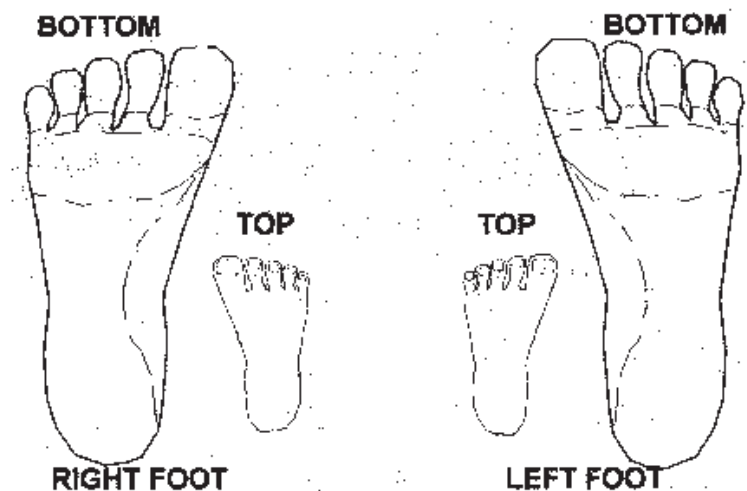
See Star method for recording WEST testing procedure.

## Monofilament Esthesiometry 101

-- Curt Weinstein, President, Connecticut Bioinstruments

1. The instrument should be calibrated to ensure it applies the expected force. At Connecticut Bioinstruments we calibrate each monofilament found on the WEST-foot™ and CT-Bio 10g™ by applying it to an artificial foot that is attached to a precision scale. We alter each monofilament, as necessary, to ensure that the monofilament delivers the specified force (within 15% of its specifications).
2. The patient should know the interval in which a monofilament touch may occur. Each WEST-foot is accompanied with a CT-Bio™ Interval Marker, so that you can get the best testing.
3. When a sharp stimulus is used, the evaluator confounds evaluation for touch-pressure sensation. Different forces describe touch and pain thresholds. Connecticut Bioinstruments employs patented Softip™ monofilaments ensuring that the stimulation is not sharp.
4. The protocol is important. The linkage between threshold and body-site was created by touching the population only once with each level of force. If you were to use a different protocol you might change the established linkage. For example, if you allow the patient to detect using a protocol of one report out of three attempts, then the linkage would be inappropriately changed.
5. The protocol is important. To achieve greater reliability without changing the normal linkage between force and body-site, accept two or three reports of sensation out of three stimulations (the "two out of three" criterion). Why does this work? The original protocol (accept 1 out of 1 attempt) has two outcomes – miss or detect. Selecting the one detect divides the outcomes in two – the 50% point. The two-out-of-three protocol has four outcomes – miss three, detect one, detect two, or detect three. Selecting the outcomes detect two and detect three divides the outcomes in two – the 50% point.

Perhaps this is more than you want to know. If so, just know that Connecticut Bioinstruments makes each WEST-foot, CT-Bio 10g, WEST-hand and WEST-D esthesiometer by hand to exacting specifications. You cannot purchase a better monofilament esthesiometer.



# The 50 vs. 10 Test™ using the WEST-foot™

## 1. Rationale

To evaluate sensibility, this procedure measures the patient's ability to differentiate between two super-threshold forces. This procedure may also detect malingers, patients who deliberately try to confound the test by lying.

## 2. Overview

The test requires twenty trials. Each trial consists of the application of two different forces in close temporal proximity and with a randomized order of presentation. The patient's task is to report which of the two stimuli feels heavier. Each stimulus is applied for one full second, with a half second interval of separation. Therefore, each trial takes about 2.5 seconds for the tester to administer and about three additional seconds for the patient to respond either "first" or "second." The twenty trials take less than two minutes. For the test to be scored correctly, patients must indicate a preference, even if they only guess.[1] Unaffected patients should score a perfect 20 correct. When the patient is totally anesthetic, the statistically expected score is ten correct responses. Therefore, scores statistically lower than ten (e.g., less than six) indicate at least one of the following: (1) the patient is malingering or (2) the instructions are misunderstood or (3) a very infrequent event has occurred.

## 3. Detailed Procedures

3.1 Choose one of the four CTS Test Forms below. Each form presents a particular 20-item random sequence of paired trials -- 10 vs. 50 g. The patient compares the two stimuli twenty times. The score is the number of correct trials. Scores less than twenty reflect neuropathy. Scores less than six reflect additional concerns (see section 4.).

3.2 Instructions to patient: I will be touching you in succession with two differently weighed probes. Your job is to tell me which probe feels heavier -- the first or the second. So you know when the touches should occur, surrounding each touch will be a click. This is what you should experience: hear a click, feel touch number one, hear a click, and then hear a click, feel touch number two, hear a click. After the fourth click, tell me whether the first or second touch was heavier. If you are unsure, please guess. There is no penalty for guessing; do the best you can. We will be repeating the procedure several times. Any questions?

3.3 Instruction to tester: The patient's view of the testing site should be blocked. Apply the first filament (10 or 50 g) to the inner side of the great toe (or the site of sensory complaint) for a full second. Just before you slowly bend the filament onto the skin, press the clicker to cue the patient of the start of the stimulus interval. Then silently say "one Mississippi" to approximate a one-second application, and then slowly lift the filament from the skin. Release the clicker to cue the patient of the end of the first interval. Wait about half a second and apply the second filament (50 or 10 g) in the same slow, deliberate manner, cueing the patient with the clicker. Prompt the patient for a response, only if necessary. The patient should catch on and respond after the second click of the second stimulus. Record all responses on the testing form. After the twentieth response from the patient, tell the patient that the test is complete. Count the number of correct trials, and record that count next to "Total."

## 4. Expected Results

We believe that most people without neuropathy and without heavy callus at the site of testing will score 20. A greater sensory deficit scores lower--to a point. Certainly scores from 19 to 10 suggest an increasingly greater deficit. Statistically speaking, however, patients void of tactile sensation will have a mean score of 10 with a standard deviation of about 2.2. Patients with greater tactile sensation will have higher scores with smaller standard deviations. Scores statistically lower than ten (e.g., less than six) indicate that the patient may be malingering. Other valid interpretations to a low score include: the instructions may have been misunderstood, or a rare event occurred by chance in a person with diminished tactile sensibility. As necessary, you may retest the patient, using another test form, to obtain a better index of sensibility (average the two scores, unless you suspect that the patient had misunderstood the original instructions).

Four random testing orders (forms) are encoded on one test sheet, following.

## Test Forms

Patient \_\_\_\_\_ % = correct or **x** = wrong

Form 1	Date	Form 2	Date	Form 3	Date	Form 4	Date
Trial	% or X	Trial	% or X	Trial	% or X	Trial	% or X
1	10g:50g	1	10g:50g	1	10g:50g	1	10g:50g
2	10g:50g	2	10g:50g	2	10g:50g	2	10g:50g
3	10g:50g	3	10g:50g	3	10g:50g	3	10g:50g
4	10g:50g	4	10g:50g	4	10g:50g	4	10g:50g
5	10g:50g	5	10g:50g	5	10g:50g	5	10g:50g
6	10g:50g	6	10g:50g	6	10g:50g	6	10g:50g
7	10g:50g	7	10g:50g	7	10g:50g	7	10g:50g
8	10g:50g	8	10g:50g	8	10g:50g	8	10g:50g
9	10g:50g	9	10g:50g	9	10g:50g	9	10g:50g
10	10g:50g	10	10g:50g	10	10g:50g	10	10g:50g
11	10g:50g	11	10g:50g	11	10g:50g	11	10g:50g
12	10g:50g	12	10g:50g	12	10g:50g	12	10g:50g
13	10g:50g	13	10g:50g	13	10g:50g	13	10g:50g
14	10g:50g	14	10g:50g	14	10g:50g	14	10g:50g
15	10g:50g	15	10g:50g	15	10g:50g	15	10g:50g
16	10g:50g	16	10g:50g	16	10g:50g	16	10g:50g
17	10g:50g	17	10g:50g	17	10g:50g	17	10g:50g
18	10g:50g	18	10g:50g	18	10g:50g	18	10g:50g
19	10g:50g	19	10g:50g	19	10g:50g	19	10g:50g
20	10g:50g	20	10g:50g	20	10g:50g	20	10g:50g
Total		Total		Total		Total	
Tester		Tester		Tester		Tester	

[1] Even when the patients are very unsure of their responses, the guess usually contains useful information--very few guesses are random, for most people. And when the guesses are random, that information is also useful.