Semmes-Weinstein sensory testing at the fingertip: Should 2.83 be the norm?

Samantha Specht
Kaitlyn P. Casaus
Elizabeth I. Madrid
Michelle W. Randall

Follow this and additional works at: https://digitalrepository.unm.edu/skc
The Semmes-Weinstein monofilament test (SWM) is an objective test of sensation that is commonly used to identify sensory impairments in the hand. In traditional SWM testing, one out of three positive responses to the 2.83 mm monofilament indicates “normal” sensation, while a positive response to only the 3.61 mm monofilament indicates “diminished” sensation. Studies have found a significant variability in sensibility across subjects, which questions the validity of the 2.83 monofilament as normal.

**Objective:** To determine if male and female subjects aged 25 and older with no history of sensory symptoms or known neurologic conditions would feel the 2.83 (normal) Semmes-Weinstein monofilament and to compare grip strength of subjects with “normal” sensation and “diminished” sensation.

**Method:** This observational, cohort design study recruited and screened 80 subjects (male and female, aged 25 and older). The main outcome measure was the percentage of participants able to detect the 2.83 monofilament at the fingertip using traditional SWM testing and scoring procedures. Secondary outcome measures were (1) percentage of participants dichotomized into the “normal” group (able to detect the 2.83 monofilament in more than 3 digits) or the “diminished sensation” group (able to detect the 3.61 monofilament, but not the 2.83) using 2/3 positive responses and (2) grip strength.

**Results:** 80 participants (800 digits) completed evaluations. Using traditional SWM procedures, 48.75% detected the 2.83 monofilament and 51.25% had a positive response to the 3.61 monofilament only. Grip strength was statistically higher for the left hand, but not the right.

Using 2/3 positive responses, 31.2% were dichotomized into the “normal” group and 68.8% were dichotomized into the “diminished sensation” group. Grip strength was statistically higher in the 3.61 group compared to the 2.83 group for both hands.

**Conclusion:** The inability of the majority of subjects to feel the 2.83 monofilament may indicate the need for refinement of the SWM test and investigation into the redefinition of the norms. Further investigation is needed with a larger sample size.