Researchers at the University of South Florida have developed an electronic indicator to be utilized for a more efficient vibratory sense evaluation.

Vibratory sense is an important part of any neurological exam. Current methods utilize a 128 Hz tuning fork. It is placed on the big toe and the patient is asked to indicate when it starts and stops vibrating. If the patient does not feel a vibration, the tuning fork is moved backwards to the malleolus of the ankle, tibial shaft, and finally the anterior iliac crest. The same process can be used for testing fingers and hands. This method is the current gold standard, but is inefficient because it relies on a patient’s verbal indication of vibration and does not quantify the amplitude of vibration felt. Further, the tuning fork’s amplitude is based on how hard the doctor hits the fork on a hard surface to begin the vibrations, which adds a significant amount of bias to the test.

USF inventors have developed a new measurement tool to test for vibratory sense in lower and upper extremities with great accuracy. This novel invention consists of an electronic indicator with a push button for user input. Upon the first feeling of vibration, the person will push the button, and will again push the button when the vibration stops. Therefore, this device more accurately produces a measurement for vibration. The vibration amplitude will also follow a set pattern. Therefore, the time that the device runs for will be indicative of the amount of sensation transmitted. This test could determine the threshold of sensation more accurately than a tuning fork by honing in on the amplitude that is felt.

ADVANTAGES:
- Measures more specific and accurate vibratory senses
- Does not rely on verbal cues
- Vibration amplitude follows a set pattern

The Dependence of Screening Efficiency on the Amplitude and Frequency of Vibration