

Neurodiagnostic tool for carpal tunnel syndrome

A portable, user-friendly diagnostic tool for carpal tunnel syndrome that integrates key nerve function measurements into a wireless, reusable device. It simplifies and speeds up testing, delivering immediate results on severity and treatment need, and is operable by non-specialists.

Business Opportunity

Carpal tunnel syndrome (CTS) affects 3–5% of the population, causing hand pain, weakness, and disability. Diagnosis currently relies on complex, expensive equipment used only in specialized neurophysiology labs, creating access barriers and long wait times. Many surgeries are performed without prior neurography, risking misdiagnoses and unnecessary procedures.

The miniaturized neurodiagnostic tool offers a compact, wireless, reusable solution that performs standard and advanced nerve conduction studies quickly and reliably, with immediate severity grading and treatment guidance. Its user-friendly design enables use by general healthcare providers rather than specialists, reducing bottlenecks, wait times, and costs. A test can be completed in under five minutes. Conducted at the orthopedic department, it enables immediate and targeted therapy, frees up neurophysiology specialist time, and ensures more patients are diagnosed and treated without delay.

This technology addresses a clear unmet need for accessible, reliable CTS diagnostics and is positioned to replace cumbersome stationary systems and disposable electrode kits currently used. In the U.S., CTS care costs Medicare alone an estimated \$2.7–4.8 billion annually, indicating a large addressable market. The technology aligns with healthcare's trend toward outpatient, point-of-care diagnostics, making it appealing in hospitals, clinics, physiotherapy practices, and even occupational health.

Inven2 seeks partners for co-development and licensing.

Technology Description

The technology is a diagnostic tool designed to assess carpal tunnel syndrome by integrating core neurophysiological measurements into a miniaturized, wireless, and reusable device. It combines a transcutaneous nerve stimulator and a biopotential amplifier within a soft, flexible "glove" that fits over the patient's hand. The glove includes flexible electrodes embedded in the material, which stimulate and record electrical signals from nerves in the hand. The electronics transmit data wirelessly to dedicated software that automatically analyzes and reports results. The glove performs both sensory and motor nerve conduction studies, along with impedance-based measurements, offering a multimodal evaluation of hand function. Designed for ease of use, the glove enables non-specialized healthcare personnel to perform standardized diagnostics outside specialized labs. It differs from existing solutions by eliminating the need for large, stationary, and expensive equipment, replacing disposable electrodes with reusable ones, and delivering immediate, standardized assessments. The compact design and automated

Category

Medical Devices

Further information

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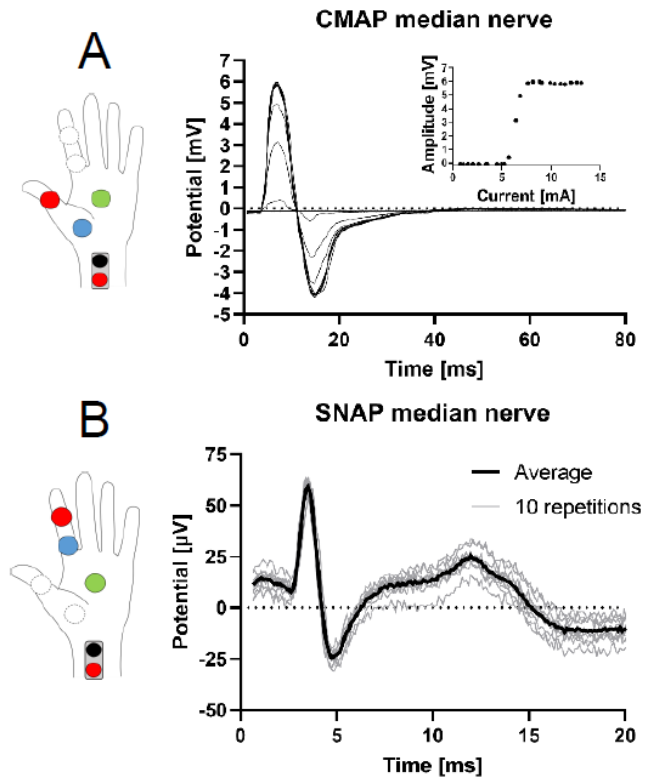
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reporting significantly reduce testing time and the dependency on highly trained personnel. The prototype device is at TRL 3.



Intellectual Property

Trade secrets on the unique combination of measurement modalities, signal processing, algorithms, and miniaturized components.