

News

The University of Texas Health Science Center at Dallas
5323 Harry Hines Boulevard Dallas, Texas 75235 (214)688-3404

February 17, 1984

CONTACT: Susan Rutherford
Office: 214/688-3404
Home: 214/349-7820

*****New clinic opens
for unique neuromuscular
testing.

DALLAS--Imaginative gadgets coupled with computers are proving medically valuable at a new clinic for testing neuromuscular damage and measuring treatment effectiveness. The Functional Assessment Clinic, recently opened at 5925 Maple Avenue, Suite 111, in Dallas, is operated by investigators and staff from The University of Texas Health Science Center at Dallas, The University of Texas at Arlington, Dallas Rehabilitation Institute and Dallas Rehabilitation Foundation.

Researchers use video displays for coordination and reaction tests, sequences of lights for memory evaluations and touch-sensitive metal plates to measure speed, strength and coordination in patients handicapped by neuromuscular diseases (multiple sclerosis, Parkinson's disease, myasthenia gravis), spinal cord injuries, adult cerebral palsy and amputated limbs. The laboratory testing system also assesses mental alertness, vision, hearing and selected activities of everyday life.

Patients are asked to perform at a number of stations along a row of machine-laden tables. One test involves a video screen and a random pursuit tracking "game." Holding a control stick, the patient works to keep an "X" on the screen inside a fast moving rectangle. Throughout this test of hand-eye coordination, the computer calculates an error score.

Hand tremor is measured with the arm extended and the hand held inside a loop containing an electric field. Here the computer can detect and quantify movement in both horizontal and vertical directions.

Near the row of tables is a platform for measuring sway and coordination. Standing unassisted proves difficult for many patients lacking neuromuscular control. The degree of imbalance in right, left, fore and aft directions is measured by the computer as the patient's weight shifts off the body's center of gravity.

Leg and foot coordination is measured by tapping metal plates while sitting in a chair. Parkinson's disease patients, for example, may know what they want their feet and legs to do when asked to tap on the plates. But when they try repeated tapping, alternating from a target sensor to the left and then a target to the right, they may begin a labored quivering motion. By measuring a detectable lack of coordination and speed, doctors can now make proper alterations in their medications.

A computer documents whether patients with chronic neuromuscular disorders, such as multiple sclerosis, Parkinson's disease or myasthenia gravis, are milliseconds slower in their movements this year than last. The testing system is also used to fine-tune treatment for the disorders, either drug or physical therapy, in accordance with the patient's test performance.

Orthopedic surgeons will use the system to measure subtle rehabilitative changes in a patient following surgery.

This project represents the clinical phase of a 5-year research grant given the group jointly by the National Institute for Handicapped Research. The grant will enable the additions of equipment that will measure gait, range of limb motion and receptivity of nerves in tendons and muscles. Also the effectiveness of the testing system will be evaluated.

Members of the research group include biomedical engineers, orthopedic surgeons, neurologists and physical therapists from the participating institutions. Dr. George Kondraske, adjunct assistant professor of Neurology at the health science center and assistant professor of Electrical and Biomedical Engineering at UTA, is the grant director. Co-medical directors of the grant are Dr. Vert Mooney, chairman of Orthopedic Surgery at the health science center, and Dr. George Wharton of the Dallas Rehabilitation Institute.

Kondraske is the testing system's designer along with Dr. Alfred Potvin, formerly of UTA. Together they have advanced the "state of the art" in neurologic testing with this and other systems.

Health science center investigators for the project include neurologist Dr. Ron Tintner and physical therapist Sue Smith.

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