

October 21, 1985

CONTACT: Lori Waggoner
Office: 214/688-3404
Home: 214/245-6611

***** New Research Offers Insight
for Back Testing & Treatment Program

A method of testing and treating patients with low back pain by use of isokinetic equipment is being studied by researchers at The University of Texas Health Science Center at Dallas.

From 70 to 90 percent of the U.S. population will have low back pain at some point in their lives, and this work will have a major impact on the treatment of that ailment. Results of this research already have indicated needed changes in current treatment programs.

Low back pain is the number one cause of disability in people under age 45 and the number three cause in those older than 45, according to orthopedic surgeons. Most available treatment therapies have not been predictably effective because there has been no way to measure how they work.

Dr. Vert Mooney, professor and chairman of orthopedic surgery at UTHSCD, predicts the new testing and treatment system will have a significant impact on determining disability cases, screening athletes and job applicants and prescribing treatment for back pain patients. Medical and legal decisions involving patients' conditions can now be based on scientific fact rather than "judgment calls" by doctors and lawyers, he says.

A team of orthopedic surgeons, physical therapists and psychologists at UTHSCD are studying the effectiveness of three new back testing machines being marketed for the first time by the Cybex Corporation.

"The research deals directly with patient testings and findings on the (Cybex) machines and will help people who are going to use the machines to use them more effectively," says Dr. Tom Mayer, clinical assistant professor of orthopedic surgery at UTHSCD and director of the Productive Rehabilitation Institute of Dallas for Ergonomics.

The health science center researchers are, so far, the only scientists who have had access to all three Cybex trunk-testing devices at the same time, Mayer says. They have actually been working with prototypes of the different machines, one of which is the only such machine in the country.

"We've been right in on the actual development of the machines," he says. "We've been assisting them with feedback on how their prototypes are working and making suggestions for changes or improvements. We've also been using the equipment clinically to develop normative data bases and patient testing protocols."

Three different areas of a patient's trunk strength can be measured by the machines -- trunk extension and flexion (bending forward and backward), torso rotation and lifting capability. Graphic print-outs can document effort, pain and fatigue. Flaws in movement also will show up on the graphic curve.

(more)

Sue Smith, assistant professor of physical therapy at UTHSCD, explains that it is possible to spot specific muscle weaknesses by comparing data from normal subjects to data from chronic patients. She is collecting strength data on normal subjects and, to date, has tested 232 people with no history of back trouble.

The data includes sex, age and weight and will give doctors and physical therapists "standard measures" of back strength for specific groups. The normative data collected at UTHSCD is a standard by which all Cybex trunk-tester users will measure their patients' strength and progress. The data will be published in the journal Spine in the near future.

Traditional methods of treating patients with back pain already have been challenged as a result of comparing the normative and chronic back pain patient data, Smith says.

A look at trunk-tester results shows that the extensor (back) muscles are stronger than flexor (stomach) muscles in normal subjects, while the reverse is true for chronic back patients. Traditionally, physical therapists and orthopedists have worked on strengthening their patients' abdominal muscles to support a bad back.

"Now that we see that the back is weaker in many of these patients," Smith says, "the emphasis is on an individualized exercise program to strengthen the back rather than relying exclusively on abdominal muscles to do all the work."

The collection of normative and chronic data is only part of the research being done at UTHSCD. Psychological studies dealing with back pain, led by Dr. Robert Gatchel, professor of psychology at the health science center, are different from earlier pain clinic approaches. "We don't set patient goals for a 'pain-free existence,'" he says. "Instead, we use rehabilitation to help patients work through the pain."

Self-assessment tests are given to patients in several forms. An analogue scale lets patients rate their pain on a scale of severity. Drawings of the body are used to let patients shade in areas where they are experiencing pain.

The researchers then note changes in the patients' self-report and evaluate the relationship between the reports and actual physical function as measured by the back testing equipment. Their studies have shown that as individual physical functioning increases, self-report indices also change in a positive direction, Gatchel says. In addition to less pain, patients also report less anxiety and depression.

"The Cybex equipment has to be used as part of a comprehensive program," says Gatchel. "The significance of the machines is the ability to document change. This provides doctors and physical therapists with objective, measurable data. At the same time it motivates patients because they can actually see the progress they're making."

Because the treatment program is comprehensive, studies have also been done on the heart's demand for oxygen when patients use the equipment. These studies have important implications for treating back patients with a history of heart trouble. With the assistance of Drs. James Stray-Gundersen and Peter Snell, exercise physiologists at UTHSCD, safe limits have been suggested for use of the equipment by heart patients. An abstract of the studies was published in the April issue of the journal Medicine and Science in Sports and Exercise.

(more)