Ultrasound As a Feedback Tool in Low Back Pain

Advancing technology has provided a new research tool for rehab specialists. It's called rehabilitative ultrasound imaging (RUSI). This type of ultrasound can be used to assess muscle contraction and function.

The examiner is able to view on a monitor or screen when selected muscles are activated. The thickness of the muscle can be measured to show muscle performance. This tool can be used as a way to give patients feedback when retraining muscles.

In this article, Physical Therapists studying rehabilitation and movement offer a review of RUSI. They discuss motor learning and motor performance in patients with low back pain (LBP). The use of RUSI as feedback to enhance both is a key topic. A summary is provided of studies done so far using RUSI to activate the deep muscles of the spine.

Motor learning refers to the process of improving the smoothness and accuracy of movements. Motor performance is the execution of a specific skill or movement. Studies show that improving both functions is important in the rehab of patients with LBP.

RUSI has been used to help patients selectively contract the lumbar multifidus (LM) and the transverse abdominis (TrA) muscles. These two deep trunk muscles are part of the core-training program used to stabilize the spine. Results of RUSI studies show that such a program can decrease LBP and reduce the recurrence rate of LBP.

Future studies are needed to find out the best timing, frequency, and schedule during feedback programs. There are many factors to consider when using RUSI to teach motor control and improve motor performance.

For example, is it better to give feedback while the patient is attempting to contract the muscle? Should feedback be given throughout the muscle contraction? Should feedback be used for every muscle contraction? When should the feedback be stopped?

The timing and optimal intervals for feedback for patients with LBP have yet to be determined. And from the first batch of studies done, it looks like some groups of LBP patients benefit more than others. More study is needed to identify when RUSI should be used with LBP.