

# CLINICAL APPLICATION OF REAL TIME ULTRASOUND IMAGING: THE LUMBO-PELVIC REGION

Continued research highlights that the primary impairment of the muscular system in individuals with lumbo-pelvic dysfunction is not one of strength, endurance or functional capacity, but rather of motor control. In particular there is a pattern of hyperactivity of the superficial, and hypoactivity of the deep muscles of the region. The clinical extrapolation of this is that the initial and pivotal focus in rehabilitation must address these motor control deficits by retraining a coordinated co-contraction of the deep trunk muscles, (segmental stabilization exercises), and restoring appropriate activation of the superficial muscles. Success hinges upon the ability to detect motor control deficits of the segmental stabilizing muscles. This requires a high level of clinical skill as these muscles are located deep and their desired contraction is sub-maximal. Consequently, the evaluation and the initial retraining phase can be augmented with the aid of **ULTRASOUND IMAGING** technology.

**REAL TIME ULTRASOUND IMAGING (RTUS)** has been used by research driven clinicians as a safe and cost effective method to enhance both the assessment and treatment of patients with motor control deficits of their lumbo-pelvic 'core' muscles, (transversus abdominis, lumbar multifidus, the diaphragm and the pelvic floor muscles). The value of RTUS in a clinical setting is that it allows for real time study of these deep muscles as they contract. This allows both the patient and the therapist to view the contraction as it happens, leaving little room for supposition. Consequently RTUS can be used as both an assessment tool, and maybe more importantly as a form of biofeedback, providing patients with knowledge of performance, in the early stages of motor relearning.

***This course is for therapists with access to RTUS or who want to acquire or perfect their imaging and interpretation skills with regards to the lumbo-pelvic region scanning applications.***

## OBJECTIVES

- Therapeutic vs. diagnostic ultrasound applications in Physical Therapy.
- Overview of the history, scope of practice and limitations of the use of diagnostic ultrasound by Physical Therapists.
- Safety and risk of harm issues associated with the use of RTUS.
- Indications for the use of RTUS by Physical Therapists with direct reference to the lumbo-pelvic region.
- RTUS imaging principles with direct reference to the Easote Aquila & Falco models.
- Detailed didactic and practical sessions in the generation, recognition and interpretation of RTUS imaging for the assessment of the abdominal fascia integrity as well as abdominal wall, pelvic floor and lumbar multifidus motor control.
- Detailed didactic and practical session in the use of RTUS for measuring muscles girth, length, cross-sectional area, abdominal diastasis width and bladder volume.
- Didactic and practical sessions in the use of RTUS in the treatment of lumbo-pelvic dysfunction including facilitation strategies for activation of TA, PFM and dMF.
- An introduction in the art of capturing still RTUS images and video clips for multi-media presentations.

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*Jackie received her undergraduate degree with distinction from the University of Alberta in 1993. In 1997 she completed the requirements to become a Resident of the Canadian Academy of Manipulative Therapists, and in 1998 her Fellow designation with credit. She is a registered instructor with the Orthopaedic Division of the Canadian Physiotherapy Association. In 1998 she was certified in the application of Intramuscular Stimulation (a dry needling technique) by the Institute for the Study and Treatment of Pain (ISTOP), and in 1999 awarded a Certificate from the Acupuncture Foundation of Canada Institute (AFCI). She is currently an independent clinical consultant in White Rock B.C. Canada.*

*Jackie has extensive clinical experience with the incorporation of real time ultrasound imaging (RTUS) in the assessment and treatment of individuals with spinal dysfunction. In addition she has identified an improvement in the instructional, palpatory, and observational skills of therapists that have had exposure to the technology for confirmation. Jackie has developed and taught specialized courses on the clinical application of ultrasound imaging in the management of low back and pelvic girdle pain for physiotherapists in Canada, the USA, Norway and the UK. In addition to her clinical and instructional pursuits she is a research consultant and associate investigator for the U.S. Army-Baylor University Doctoral Program in Physical Therapy, and has been invited to be guest editor for the Journal of Manual and Manipulative Therapy's special issue on ultrasound imaging in 2006. Jackie has contributed to peer reviewed journals and a text on the topic of RTUS, and is the author of a textbook entitled "The Clinical Application of Ultrasound Imaging for Rehabilitation of the Lumbopelvic Region" which is currently in press with Elsevier. Jackie was also the chair of the Real Time Ultrasound Imaging ad hoc committee for the College of Physical Therapists of British Columbia whose mandate was to outline recommendations regarding the implementation of RTUS in physical therapy practice.*