Motor Control & Exercise: Thoracic Stabilization & The Functional Upper Limb

with
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Course Description
Research in the last decade has greatly increased our understanding of muscle and joint function. New concepts in joint stability and how load is transferred through body systems highlight the importance of proprioception, automatic muscle activity, and motor control in regaining optimal movement after injury. Pain and dysfunction in the upper quadrant, including the thoracic spine, the shoulder, and the cervical spine, are common conditions seen in clinical practice. Often patients present with symptoms in two or three of these areas, and the challenge for the clinician is to determine which area is the primary dysfunction, and what type of treatment intervention is going to make the biggest impact on both pain and function.

Optimal function of the scapula and shoulder complex requires that both the thoracic spine and cervical spine provide a stable base. The role of the thoracic spine in scapular, glenohumeral, and cervical dysfunction is often not recognized. In these cases, exercise and treatment interventions such as scapular muscle training are ineffective until the thoracic control issues have been addressed. Although there is limited evidence related to specific motor control of the thoracic spine, an effective clinical model has been developed based on research in the lumbopelvic and cervical regions and on experience in treating patients with upper quadrant problems. The goal of this 2-day course is to present this framework for assessing upper quadrant function as a whole with the intent to identify which area (thoracic spine, cervical spine, scapula, glenohumeral joint) should be the focus of treatment, specifically muscle retraining.

The focus of the course will be the assessment and restoration of functional load transfer through the thoracic spine, cervical spine, and proximal upper limb. The requirements for optimal function of the upper quadrant are discussed, and clinical tests to determine the site of failed load transfer in the upper quadrant are practiced. The role of manual therapy and the application of manual release techniques are presented along with a protocol for restoring functional stability of the thorax. Specific segmental stabilization techniques for the thoracic spine and cervical spine are practiced with a protocol for progression of the stabilization program to functional integration.

Motor Control & Exercise – Thoracic stabilization and the functional upper limb (Level 2) is a 2-day course that builds on the Level 1 course “The Thorax – An integrated approach for restoring function, relieving pain”. The level 2 course has a large practical component with a focus on imagery and movement retraining to restore optimal function in all loading situations (from low to high load tasks). Techniques that integrate manual skills and exercise prescription skills are taught with the goal of facilitating optimum joint control and position during exercise progressions. This approach enables retraining of dysfunctional stabilization and movement strategies by helping patients find a new way to move and to integrate these new strategies into everyday movement.

Course Outline/Objectives
This Level 2 course will:
- review the definitions of stability, the Integrated Model of Joint Function (as developed by Lee/Vleeming), and the roles of manual therapy, exercise, and motor control in restoring function.
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- discuss the requirements of functional movement and effective load transfer for the upper quadrant (the thoracic spine, the cervical spine, and the proximal upper limb).
- present the assessment of spinal posture and its role in upper quadrant dysfunction; techniques to restore neutral spine position in supine, sitting, supported standing, four-point kneeling and standing will be presented with a focus on the thoracic and cervical curvatures.
- Discuss a protocol for thoracic and cervical stabilization as a base for upper quadrant function.
- Present load transfer tests (Sitting Arm Lift and Prone Arm Lift tests) that guide when to use joint techniques or myofascial release techniques to decompress the joints vs. when to use motor control exercises to stabilize the joints.
- Discuss how to differentiate which area rehabilitation should be focused on in order to make the most difference to your patients’ function (thorax vs. cervical spine vs. scapula vs. glenohumeral joint).
- Present techniques to teach recruitment and isolation of the segmental thoracic multifidus, the cervical multifidus, and co-contraction of cervical multifidus with the deep neck flexors. Verbal cues, palpation skills, and facilitation techniques will be practiced to ensure correct recruitment and control of the neutral zone and proper exercise performance.
- Present and practice the assessment of neutral/optimal joint position for the scapulo-thoracic and glenohumeral articulations at rest and during exercises.
- Present and practice key exercises for stabilizers of the scapula and glenohumeral joint along with techniques to facilitate centralization of the glenohumeral joint during functional exercises.
- Practice assessment and manual facilitation of optimal alignment of the spine and upper extremities during integration and functional exercises.
- Present taping techniques to augment support for thoracic and scapular control as motor control and stabilization exercises are progressed.

Course Preparation

It is highly recommended that participants take the Level 1 course, “The Thorax – An integrated approach for restoring function, relieving pain” prior to taking this Level 2 course. For those participants who have not taken the Level 1 course but still wish to take the Level 2 course, it is necessary to review the anatomy & biomechanics of the thoracic spine from these sources:


Course Requirements

Wear comfortable clothing including shorts/sports bra which are suitable for examination of the thoracic spine and shoulder complex (no racer or t-back bras). If possible, bring a six foot piece of yellow theraband, some coverroll/leukotape, and exercise ball/stability ball.
Linda-Joy Lee BSc, BSc(PT), FCAMT, MCPA, PhD Candidate

Linda-Joy is a Physical Therapy graduate from the University of British Columbia, Canada, and UBC Wesbrook Scholar (1996). “LJ” became a Fellow of the Canadian Academy of Manual and Manipulative Therapists in 1999 with distinction and completed her certification in Intramuscular Stimulation (IMS) in July 2001. LJ is an education and clinical consultant at Synergy Physiotherapy in North Vancouver, BC. She sees a wide variety of patients, including all levels of recreational and competitive athletes, and specializes in treating patients with pelvic and spinal dysfunction. LJ is known for her skills in motor control and movement retraining and is experienced in the use of Real-time Ultrasound imaging for assessment and retraining of the lumbopelvic core muscles. LJ has worked with internationally known clinician Diane Lee since 2000, and is currently collaborating with Diane on several projects in addition to teaching and developing courses based on the Integrated Model of Function. Passionate about new challenges, LJ is also currently pursuing a PhD part-time at the University of Queensland in the Human Neurosciences Unit with Professor Paul Hodges. Her research is focused on investigating motor control of the thoracic spine and its relation to the lumbopelvic region. LJ recently co-authored two chapters in the 3rd edition of “The Pelvic Girdle” by Diane Lee and published a chapter on “Restoring Force Closure/Motor Control of the Thorax” in the book “The Thorax: An Integrated Approach” by Diane Lee. In addition, she has co-produced, along with Diane, a 4.5 hour, 2-disc DVD set titled “An Integrated Approach to the Assessment and Treatment of the Lumbopelvic-Hip Region”. LJ enjoys opportunities to present lectures and teach courses both nationally and internationally on these and other topics.

Diane Lee BSR, FCAMT, CGIMS

Diane Lee is a Physical Therapy graduate from the University of British Columbia, Canada, 1976. She qualified with distinction as a Fellow of the Canadian Academy of Manipulative Therapists in 1981 and went on to instruct and examine in the Canadian Orthopaedic post-graduate education system for 18 years. Currently, Diane is the owner as well as an education and clinical consultant at Diane Lee & Associates in White Rock, British Columbia, and is well known both nationally and internationally for her clinical work on pelvic dysfunction. She has integrated the recent scientific research on lumbopelvic function into a clinical model for assessment and treatment. This model was developed in conjunction with Dr. Andry Vleeming. She is currently collaborating with Linda-Joy Lee on the clinical application of this model. In addition to lecturing internationally on this topic, Diane is an editorial advisor for the journal Manual Therapy as well as the Journal of Manual and Manipulative Therapy and a Scientific Committee member for the Interdisciplinary World Congress on Low Back and Pelvic Pain.