World Class CPD

Functional Rehabilitation of Shoulder Muscles Evidence & Application

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April 9th/10th - Loughborough, Leics
April 16th/17th - London
April 23rd/24th - Bolton, Lancashire
April 30th / May 1st - Southampton, Hampshire

This brand new bespoke 2 day course is predominately aimed at physiotherapists, osteopaths, chiropractors & sports rehab professionals wanting to improve their approach to functional shoulder rehabilitation.

Tutor
Associate Professor Karen Ginn is a musculoskeletal anatomist & musculoskeletal physiotherapist in the Discipline of Biomedical Science, Sydney Medical School, University of Sydney. She teaches functional, applied anatomy to various health professional groups and also works in part time private practice. She is involved in research related to the assessment and treatment of shoulder dysfunction evaluating the validity and reliability of components of the physical examination of the shoulder. She has over 30 publications in such journals as Journal of Orthopaedic Research, Medicine and Science in Sport and Exercise, Physical Therapy, Journal of Science and Medicine in Sport, Journal of Rehabilitation Medicine and Journal of Electromyography and Kinesiology, Clinical Anatomy. She is regularly invited to present at conferences both nationally and internationally and is a Visiting Professor at the University of Gothenburg, Sweden and an Honorary Research Associate at the Royal National Orthopaedic Hospital, London. She is currently a member of the Board of the International Congress of Shoulder and Elbow Therapists.

Course outline
At the end of this course participants will be able to:

• critically evaluate the contribution of the current diagnostic classification system, imaging procedures & special orthopaedic tests in directing effective treatment for shoulder dysfunction
• critically evaluate the evidence in support of surgery & active (exercises) & passive conservative treatment for shoulder pain
• critically evaluate the functional anatomy of the normal shoulder joint:
  i. the contribution of active and passive stabilising structures
  ii. the specific mechanisms whereby rotator cuff (RC) muscles contribute to shoulder joint movement and stability
  iii. the role of the scapula in optimising shoulder joint & shoulder muscle function
  iv. the multiple roles muscles perform, and the level of muscle co-ordination required, in normal shoulder region function
• critically evaluate commonly used methods of assessing and treating shoulder muscle dysfunction
• investigate alternative methods of assessing and restoring shoulder function that better reflects normal functional anatomy

Day 1 lecture/discussion format
• exploration of recent research into shoulder muscle function
• critical evaluation of current Physiotherapy assessment and treatment of shoulder dysfunction

Day 2 practical format
• critical evaluation of the functional anatomical basis of current Physiotherapy assessment and treatment of shoulder dysfunction
• exploration of alternative methods of assessing and restoring shoulder function that better reflects normal functional anatomy

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The shoulder joint is an extremely mobile, multiaxial ball and socket joint, the function of which is to facilitate maximum functional use of the hand. In order to achieve this extensive range of motion, the structure of the shoulder joint is characterised by minimal passive constraint. Consequently, passive structures do not significantly contribute to shoulder joint stability: the size differential between the glenoid fossa and the humeral head minimise the contribution of articular contact to joint stability; joint capsule is thin and lax to facilitate large range of movement; and the shoulder joint has relatively few ligaments to restrict joint motion.

One of the consequences of these modifications to bony and fibrous structures of the shoulder joint which permit its large range of movement is the unparalleled reliance on muscles to maintain active shoulder joint stability. Because of their horizontal orientation to the shoulder joint line and their intimate anatomical relationship with the shoulder joint capsule, the most important muscles performing this dynamic stabilising role are the four muscles of the musculotendinous rotator cuff (RC): subscapularis, supraspinatus, infraspinatus and teres minor. The RC muscles take origin from the mobile scapula and their tendons splay out and interdigitate to form a common, continuous insertion into the lateral shoulder joint capsule and onto the tubercles of the humerus.

The traditional view of the role of the RC muscles to provide functional shoulder joint stability is that they contribute in equal proportions to compress the humeral head into the glenoid fossa during all shoulder movements to limit humeral head translation as well as to depress the humeral head to prevent it translating superiorly due to deltoid activity. However, recent evidence that the RC muscles are recruited at significantly different activity levels during shoulder flexion and extension suggests that simultaneous recruitment of all the RC muscles in equal proportions is not an essential requirement to achieve dynamic shoulder joint stability. This research indicated that different parts of the RC function to stabilise the shoulder joint by counterbalancing potential anterior and posterior translation due to flexor and extensor muscle activity respectively.

Another traditional view i.e. that the RC muscles are functioning as stabilisers of the shoulder joint during all shoulder movements, may also require revision. Recent research indicates that maximal isometric shoulder adduction tasks are associated with minimal to low levels of RC muscle activity suggesting that either activity in shoulder adductor muscles does not produce translation forces on the humeral head, or that muscles other than the RC are functioning to stabilise the shoulder joint during adduction.

In order to achieve full range movement of the shoulder co-ordinated movement of the scapula with the humerus is required to position the glenoid fossa for optimal articulation with the humeral head throughout range as well as to maintain the mechanical advantage of the scapulohumeral muscles, including the RC muscles. It is the role of axioscapular muscles to accurately position the scapula for optimal articular surface and muscle alignment. However, because the mobile scapula provides the origin of important shoulder muscles, including the RC muscles, activation of these muscles has implications for axioscapular muscle function. Contraction of the RC has the potential to move the scapula away from the midline, requiring co-ordinated contraction of axioscapular muscles to maintain the correct scapula position ie to stabilise the scapula, to enable optimal RC function.

Complex, co-ordinated muscle function is the most important requirement to achieve full range movement and maintain functional stability at the shoulder joint. Accurate knowledge of the complexity of these muscle mechanisms is necessary to provide the detailed sound functional anatomical basis to inform the clinical reasoning processes underpinning Physiotherapy assessment and treatment of the shoulder. Re-evaluation of current assessment and treatment strategies at the shoulder in light of recent evidence regarding the function of the RC is likely to improve outcomes for patients with shoulder dysfunction.

References:
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