ICSET PRE-CONGRESS COURSES
September 6, 2023

1) Practical Application of WIP1 Rehabilitation for MDI of the Shoulder

Abstract:
The most commonly recommended initial treatment for multidirectional instability of the shoulder is a rehabilitation program. The WIP1 (Watson Instability Program #1) has been demonstrated in two single group studies and a randomised control trial as an effective evidence-based program for rehabilitation to improve the symptoms, strength, outcomes and function of patients with multidirectional instability of the shoulder.

Aim:
The aim of this workshop is to outline the principles underpinning the programme, demonstrate and teach attending physiotherapists the practical aspects of the WIP1:

- -Scapula assessment and scapula correction leading to tailored rehabilitation options for scapula stabilisation drills,
- -Humeral Head assessment and correction leading to tailored rehabilitation options for achieving dynamichumeral head centralisation,
- -the six-stage WIP1 rehabilitation program for the conservative management of multidirectional instability (WIP1)

1. Scapula setting and stabilisation phase / Scapula stabilisation during active motion
2. Posterior muscular development
3. Flexion control from 0-45˚Abd
4. Sagittal and Coronal plane control from 45-90˚Abd
5. Deltoid strengthening stage
6. Sport specific and functional strengthening stage

Background & Research:

Warby S, Ford J, Hahne A, Watson L, Balster S, Lenssen R, Pizzari T. (2016) The effect of exercise-based management on multidirectional instability of the glenohumeral joint: A pilot randomised controlled trial protocol. *British Medical Journal Open* 6(e013083).
https://doi.org/10.1136/bmjopen-2016-013083

Watson L, Warby S, Balster S, Lenssen R, Pizzari T. (2016) The treatment of multidirectional instability of the shoulder with a rehabilitation program: Part 1. *Shoulder & Elbow*: 1758573216652086.
http://journals.sagepub.com/doi/abs/10.1177/1758573216652086 Watson L, Warby S, Balster S, Lenssen R, Pizzari T. (2016) The treatment of multidirectional instability of the shoulder with a rehabilitation program: Part 2. *Shoulder & Elbow*: 1758573216652087. http://journals.sagepub.com/doi/abs/10.1177/1758573216652087 Warby S, Ford J, Hahne A, Watson L, Balster S, Lenssen R and Pizzari T. (2017) Comparison of 2 Exercise Rehabilitation Programs for Multidirectional Instability of the Glenohumeral Joint: A Randomized Controlled Trial. *The American Journal of Sports Medicine* Vol 46(1): 87 – 97 https://doi.org/10.1177/0363546517734508

Ganderton C, Tirosh O, Munro D, Meyers D, Lenssen R, Balster S, Watson L, Warby S. (2021) Rehabilitation for atraumatic shoulder instability in circus arts performers: delivery via telehealth. *JSES* 31(5): e246-257.*
https://doi.org/10.1016/j.jse.2021.10.033

Watson L, Pizzari T, Balster S, Lenssen R, Warby S. (2022) Advances in the Non-Operative Management of Multidirectional Instability of the Glenohumeral Joint. *J Clin Med* 31;11(17):5140.
http://doi: 10.3390/jcm11175140

Simon Balster

Senior Shoulder Physiotherapist
BPhty(Hons), BSc(Hons)
Member of APA, SESA, SEPA, VSES
President of SEPA
https://www.linkedin.com/in/simon-balster-29078750/

Simon been presenting shoulder orthopaedic physiotherapy courses and lectures throughout Australia and Overseas for the past 23 years. He's an Australian Physiotherapist with 28 years private practice experience. For the last 22 years Simon has worked exclusively in the area of shoulder orthopaedic physiotherapy.
He is a full-time private practice clinician, researcher and educator of physiotherapists on shoulder and upper quadrant musculoskeletal function and disorders.
Simon has been involved in Physiotherapy research since his Honours thesis was published in Manual Therapy with Prof Gwen Jull in 1997. He has integrated his clinical experience of assessment and rehabilitation of the shoulder with his love for research and been an author of 20+ peer-reviewed articles.
Simon's clinical skills in shoulder physiotherapy diagnosis, guidance and management are regularly sort out by people of all demographics and from all over Australia. He's provided his expertise to a variety of elite level athletes and professional sporting organisations, professional artists includes internationally acclaimed concert pianists, dancers, painters and sculptors as well as everyday weekend-warriors, mums and dads, grandparents and children with shoulder problems or injuries.

2) Clinical reasoning to inform the choice of exercise/s for patients with shoulder dysfunction – evidence & application

Abstract

Exercise is the mainstay of conservative treatment for shoulder dysfunction. However, evidence to support the efficacy of specific exercises for different categories of shoulder dysfunction is limited leaving clinicians with the dilemma of how to choose effective, efficient exercises for their patients with shoulder dysfunction. This course will explore a rationale, evidence-based approach to determining and progressing patient-specific therapeutic shoulder exercises.

Course Objectives

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

- critically evaluate the functional anatomy of the normal shoulder joint in particular the:
    - specific mechanisms whereby rotator cuff (RC) muscles contribute to shoulder joint movement & stability
    - role of the scapula & axioscapular muscles in optimising shoulder joint & shoulder muscle function
    - multiple roles muscles perform, & the level of muscle co-ordination required, in normal shoulder region function
- critically evaluate the contribution of the current diagnostic classification system, imaging procedures & special orthopaedic tests in directing effective treatment for shoulder dysfunction
- incorporate recent evidence & functional anatomical principles into the clinical reasoning process to aid in:
    - understanding the anatomical basis for the presenting shoulder symptoms
    - determining the most appropriate exercise rehabilitation strategy
    - progressing therapeutic exercises in a functionally appropriate manner

Background Information

The shoulder joint is an extremely mobile, multiaxial ball & socket joint, the function of which is to facilitate maximum 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 & the humeral head minimise the contribution of articular contact to joint stability; the joint capsule is thin & lax to facilitate large range of movement; & the shoulder joint has relatively few ligaments to restrict joint motion.

One of the consequences of these modifications to bony & fibrous structures of the shoulder joint which permit its large range of movement is the unparalleled reliance on muscles to maintain functional shoulder joint stability. Because of their horizontal orientation to the shoulder joint line & their intimate anatomical relationship with the shoulder joint capsule, the most important muscles performing this dynamic stabilising role at the shoulder joint are the four muscles of the musculotendinous RC: subscapularis, supraspinatus, infraspinatus & teres minor. The RC muscles take origin from the mobile scapula & their tendons splay out & interdigitate to form a common, continuous insertion into the lateral shoulder joint capsule & 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 & extension suggests that simultaneous recruitment of all the RC muscles in equal proportions is not an essential requirement to achieve dynamic shoulder joint stability (Rathi et al 2016; Wattanaprakornkul et al 2011a, 2011b). This research indicated that different parts of the RC function to stabilise the shoulder joint by counterbalancing potential anterior & posterior translation due to flexor & extensor muscle activity respectively.

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 & 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 & maintain functional stability in the shoulder region. 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 & treatment of the shoulder.

References

- Rathi S et al (2016) The effect of in vivo rotator cuff muscle contraction on glenohumeral joint translation: an ultrasonographic & electromyographic study. Biomech 49:3840-3847.
- Wattanaprakornkul D et al (2011a) The rotator cuff muscles have a direction specific recruitment pattern during flexion & extension exercises. *J Sc Med Sport.*14:376-382.
- Wattanaprakornkul D et al (2011b) comprehensive analysis of muscle recruitment patterns during shoulder flexion: an electromyographic study. *Clin Anatomy.* 24(6):619-626.

Professor Karen Ginn

Karen is a Professor of Musculoskeletal Anatomy in the Faculty of Medicine & Health at the University of Sydney & is a musculoskeletal physiotherapist. She has taught functional, applied anatomy to various health professional groups at undergraduate & postgraduate level & currently conducts professional development courses related to the assessment & treatment of shoulder dysfunction nationally & internationally. She is involved in research related to the assessment & treatment of shoulder dysfunction including: clinical trials investigating the efficacy of conservative and surgical treatment for shoulder dysfunction; electromyographic (EMG) studies investigating shoulder muscle activation patterns in normal subjects, swimming athletes & patients with shoulder dysfunction; EMG studies evaluating shoulder exercises; studies evaluating the validity and reliability of components of the physical examination of the shoulder; investigations into shoulder stiffness and cortical changes associated with shoulder pain; & programs designed to prevent the development of shoulder pain in the elderly & various at risk professional groups. She has over 70 publications in peer-reviewed journals & is currently a member of the Board of the International Confederation for Scientific Societies of Shoulder and Elbow Therapy.