RECONCILING BIOMECHANICS WITH PAIN SCIENCE

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Brief Course Description
Significant research in the pain neurosciences and biomechanics field often appears to undermine the reasoning and justifications for many of the traditional therapeutic approaches and techniques of the many rehabilitation professions. By addressing both the weaknesses and strengths of the biomechanical approach we can see that treatment can be much simpler, congruent with the cognitive, neuroscience approach and best evidenced based practice.

This course provides a framework to utilize an alternative biomechanical approach that blends neuroscience pain education. This course teaches the therapist how to teach patients about pain science in a treatment framework that still utilizes specific/corrective exercise and manual therapy. Therapists are taught a model of treatment that **simplifies** the assessment process and the treatment.

LEARNING STYLE

This course is a mix of a discussion based lecture, case studies and practical components. The practical components are used with the case studies to “feel” the interventions. However, there no “specific” techniques. Rather, the point is to show that the framework helps the therapist use their own techniques but in a different way. Further, we can then share “techniques” from all participants in the class. Exercises are demonstrated and time is given to practice these exercises. When exploring how Key Messages relate to pain and changing behaviour the practical component helps the therapist use their own experiences and “stories” to fit with the Key Messages of pain and behaviour change.

OBJECTIVES

- Provide assessment techniques for partitioning the role of biomechanics and therapeutic neuroscience in the treatment of pain and injury
- demonstrate how biomechanical treatments and explanations can address the multidimensional nature of pain
- Provide exercise prescription that is informed by biomechanics and therapeutic neuroscience
- Learn to different methods of applying therapeutic neuroscience to a traditional biomedically based practice
- learn the practical applications of the best research on tendon pathology, symptom modification and graded motor exposure.

LECTURES

Treatment Fundamentals Lecture (60 minute practical) 9am to 1pm

- An alternative to the kinesiopathological model of treatment is produced
- A case for simplicity is made
- A simplified framework to incorporate both biomechanical treatments with psychosocial treatments is outlined
- a four 15 minute practical exercise break to introduce the concept of comprehensive capacity and graded exposure to:
    - Achilles tendinopathy
    - Comprehensive shoulder exercise prescription
    - Painful hip adduction
    - Painful lumbar spine flexion

Graded Exposure and Three faces of flexion pain: Incorporating biomechanics into the biopsychosocial approach. (2pm - 3:00pm- practical 20 minutes)

- biomechanics, load and stress are still important variables in injury management
- determining when biomechanics are important is evaluated during this section with a special emphasis on flexion related pain
- How to use graded exposure principles to decrease pain and change movement behaviour
- A guide to the concept of facilitating and not fixing

Symptom Modification Model of Injury/Pain Management (3:00 to 5pm - Practical 45 minutes)

- the comprehensive capacity and graded exposure approach to injury and pain treatment will be detailed
- Techniques from various schools of thought (Mulligan, ART, myofascial release, McGill, Sahrmann, CFT, tendinopathy research) are demonstrated and reconceptualized to fit into a simpler clinical decision making framework
- We've distilled common biomechanical treatments to justify those treatments within an alternative model
- students will learn a framework and simplified clinical reasoning tool to help guide therapy
- Symptom modification as clinical reasoning to guide interventions as demonstrated through case studies
- simplifying both manual therapy, movement based interventions and exercise therapy via understanding the commonalities amongst our most popular interventions
- traditional manual therapy techniques will be reframed to be maximize a biopysychosocial intervention approach
- active and passive approaches to the symptom modification interventions and how these manual therapy approaches are supported by exercise interventions will be taught.

When Biomechanics Matters (Bonus Lecture - interspersed throughout the course)

- an exploration of the utility and limitations of the biomechanical model in pain and injury management
- introduction to how the current biomedical model can be simplified and modified to be consistent with the best evidence of both pain science and biomechanical science
- Exploration of spine stability theory, scapular dyskinesis and common kinesiopathology models of pain and dysfunction

- A framework for when movement quality is important for pain and injury
- The importance of habit interruption as a rationale for changing movement quality

Day 2

Demystifying Manual Therapy (9 - 9:30)

- simple research on manual therapy on physiology that should profoundly shape all manual therapy interventions

Just load it. (9:30-11 am - practical 30 minutes)

- A simplified approach to exercise prescription is shown
- The importance of comprehensive capacity and movement options is highlighted and illustrated when it is necessary
- an evidence based approach to understanding pain and rehabilitating common conditions
- an approach to understand the assessment of sensitivity in exercise prescription
- demonstrations of the exercise interventions
- case study autopsies are performed illustration common themes behind various treatment approaches and how a simplified intervention can be effective

- A review of common themes in tendinopathy and how that research can guide much clinical practice

The Point of Pain Science and Key Messages Workshop (11-12 and 1-3 pm)

- Pain science primer
- Identifying potential false beliefs that might influence pain and disability
- How to deliver Key Messages that are chosen by false beliefs
- Interviewing techniques are illustrated to help change opinions and ultimately change behaviour
- case studies are presented by the class and solved with facilitation from the instructor and the group
- a reconceptualization of common clinical tests is demonstrated to show that much of our current testing can be modified to still be useful
- Specific examples demonstrating how to begin meaningful treatment “when everything hurts” and all manual therapy and exercise therapy has failed