

# EXERCISE FOR CHRONIC MUSCULOSKELETAL PAIN – IMPROVING TREATMENT OUTCOMES

PROFESSIONAL

Chronic musculoskeletal pain (CMP) refers to ongoing pain felt in the bones, joints and tissues of the body that persists longer than three months. It includes a diverse range of diagnoses, some of which imply a driving tissue pathology or structure (osteoarthritis, discogenic back pain) and some of unknown pathology (spinal pain, fibromyalgia, chronic widespread pain). CMP is the major cause for pain and disability in Western society, affecting up to 20% of adults, and is predicted to increase by >50% by 2050. It is now well accepted that with CMP, secondary pathology or the consequences of persistent pain including fear of movement, pain catastrophising, anxiety, and nervous system sensitisation appear to be the main contributors to pain and disability<sup>1</sup> (Fig. 1).

## TREATMENT APPROACH

Biopsychosocial treatment that acknowledges and aims to address the physical, psychological and social factors underpinning pain and disability is currently accepted as the most effective approach to chronic pain<sup>2</sup>. Implementing a biopsychosocial approach requires a comprehensive assessment to understand the patient's thoughts, beliefs and behaviours concerning physical activity and pain. This allows clinicians to implement combined patient-tailored exercise and targeted education to address the primary factors contributing to pain and disability.

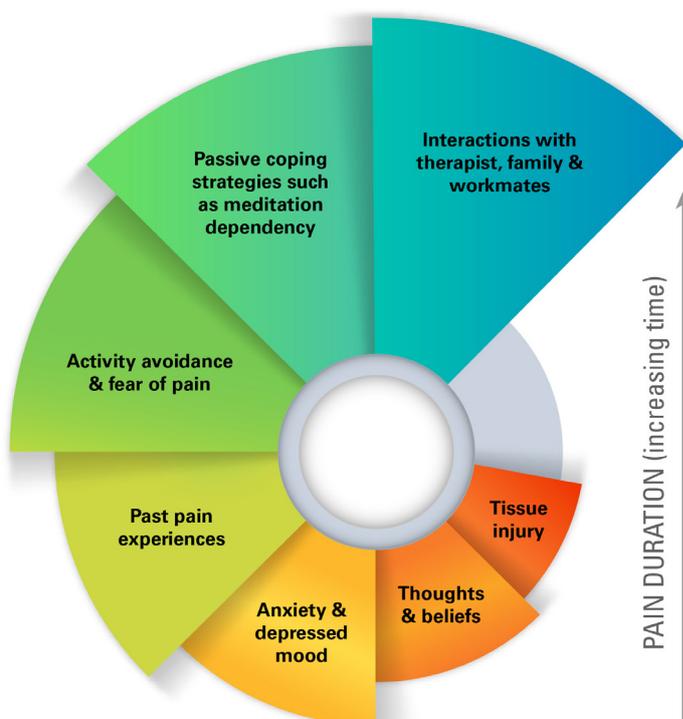
## CLINICIAN COMPETENCY

Clinicians competent with implementing biopsychosocial treatment that address the secondary pathology of persistent pain have great potential to improve patient outcomes above physical therapy alone (exercise and physiotherapy). It is imperative that clinicians understand modern pain science concepts so they can engage in meaningful and positive pain dialogue and 'explain pain' to patients. Explaining pain refers to a range of structured educational techniques that aim to change how the patient makes sense of their pain<sup>3</sup>. The targeted conceptual change is from 'pain as a sign of structural damage or pathology', to 'pain as a protective mechanism modulated by all credible evidence of tissue damage and safety'. Explaining pain should commence at the first consultation and be ongoing and reviewed throughout treatment.

## HOW EXERCISE HELPS

There is consistent evidence that exercise can improve pain, disability and function in patients with CMP. The common belief is that exercise for CMP, which targets physical function, will improve pain and disability. This is not supported by the finding that during an exercise program for CMP, improvements in pain and disability were unrelated to changes in physical function (e.g. range of motion, strength, muscular endurance)<sup>4</sup>. It follows then, that other exercise induced changes in secondary pathologies, improved psychological status and cognitions (e.g. reduction in fear, anxiety, and catastrophisation, increased pain self-efficacy), exercise-induced analgesia, and functional and structural adaptations in the brain may influence pain and disability more than physical function.

FIGURE 1. CONTRIBUTING FACTORS TO CHRONIC PAIN



## COMMENCING EXERCISE

Goal setting should be completed before commencing exercise and involve a collaborative approach with the clinician to assist the patient to identify meaningful goals, not only related to exercise, physical activity and function, but other biopsychosocial aspects. A guiding principle is that all exercise and activity be perceived as safe and meaningful by the patient and frequent reassurance of safety is required during treatment<sup>5</sup>. It is imperative that patients understand and believe it is safe to exercise with discomfort that: plateaus and doesn't continue to rise significantly; they can cope with and feel is manageable; and gradually decreases after they have finished exercise. Exercise prescription should be time contingent as opposed to pain contingent, as it is not possible to dose exercise proportional to pain threshold<sup>5</sup>. While pain intensity using a numeric rating scale or visual analogue scale is assessed at intervals throughout treatment, it is not necessary to assess pain intensity during every exercise session as this does not provide any additional benefit beyond a tolerable/not tolerable dichotomy. Pain-intensity ratings do not accurately reflect tissue damage and over time are influenced less by nociception and more by emotional and psychosocial factors. (Fig. 2: key points concerning exercise prescription for CMP).

## EXERCISE TYPE AND INTENSITY

There is little evidence supporting one type of exercise over another. While there is strong support for aerobic and resistance exercise for CMP, evidence supporting other modalities including yoga, hydrotherapy, Pilates and tai chi is emerging. Exercise modalities that patients enjoy and associate with achieving their goals improve treatment adherence. While there is considerable uncertainty regarding exercise dosage for CMP, people with CMP appear responsive to lower exercise dosage than healthy individuals. Low to moderate intensity aerobic exercise (40-70% HRmax) and resistance exercise (40-60% 1RM) has shown to be sufficient to evoke beneficial changes with CMP<sup>5</sup>. While clinicians should aim to gradually increase exercise intensity and apply the principles of progressive overload as the patient's confidence and exercise tolerance improve, it is important not to lose sight of the fact that simply assisting patients to become more active and setting goals around increasing their activity levels can be beneficial.

## CONSIDERATIONS

Health screening prior to commencing exercise is mandatory for all patients. Relative contraindications include red flags such as acute injury or trauma, history of cancer, systemic steroids, and drug abuse. Yellow flag screening should also be routinely performed. As yellow flags become more prevalent and/or other significant factors impact on rehabilitation (e.g. substance abuse, diagnosed psychopathology), exercise intervention alone is unlikely to be beneficial and requires a move towards multi or inter-disciplinary treatment.

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Chronic Pain Australia [www.chronicpinaustralia.org.au](http://www.chronicpinaustralia.org.au)

### FIGURE 2. EXERCISE PRESCRIPTION FOR CMP

- Understanding contemporary pain biology and "explain pain" are key competencies
- Frequently reassure patients that it is safe to move/pace up despite their symptoms
- Exercise prescription should be time, as opposed to pain contingent, using a tolerable/ not tolerable dichotomy
- Having readymade responses to flare ups can reduce severity
- Exercise should be individualised, enjoyable, related to patient goals with a level of supervision specific to the patient
- Patients with CMP respond to lower exercise dosage with most exercise prescription at low to moderate intensities
- Closely observe and monitor exercise practice, seek and provide feedback and correct poor technique
- Encourage patients to self-monitor exercise (e.g. diaries, activity trackers, etc.)
- Place emphasis on developing/ restoring movement confidence and quality



If you have any concerns about the safety of your patient in commencing an exercise program, please consider referral to a Sport and Exercise Physician.

Find a Sport and Exercise Physician [www.acsep.org.au/](http://www.acsep.org.au/)

## REFERENCES

1. Siddall PJ, Cousins MJ. (2004). Persistent pain as a disease entity: Implications for clinical management. *Anesth Analg.* 99:510-520
2. Meeus M, Nijs J, Van Wilgen P, et al. (2016). Moving on to Movement in Patients with Chronic Joint Pain. *Pain.* 2016: 1
3. Moseley GL, Butler DS. (2015). 15Years of Explaining Pain - The Past, Present and Future. *J Pain* 16:807-813
4. Steiger F, Wirth B, de Bruin ED et al. (2012). Is a positive clinical outcome after exercise therapy for chronic non-specific low back pain contingent upon a corresponding improvement in the targeted aspect(s) of performance? A systematic review. *Eur Spine J.* 21:575-98
5. Booth, J; Moseley, G, Schiltenswolf, M et al. (2017). Exercise for chronic musculoskeletal pain; A biopsychosocial approach. *Musculoskeletal Care.* DOI: 10.1002/msc.1191