

## **Pain Management Programme Incorporating Pain Neurophysiology Education**

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### **Abstract**

Pain is a complex perceptual experience, commonly defined as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.” A widespread issue for Canadians, pain is often poorly managed. Currently available treatments rarely resolve symptoms completely, and many target only the biological aspects of pain and are associated with negative side effects. Interdisciplinary pain management (IPM)—whereby services from a variety of health care professionals are coordinated toward one goal has gained significant support in the past 15 years. IPM uses the bio-psychosocial model of pain to address the multidimensional nature of pain and its consequences, focusing especially on psychological, social, and environmental determinants. A conservative treatment with few adverse events, it is the treatment approach recommended by the International Association for the Study of Pain for patients with chronic pain of all etiologies. In many clinics, IPM yields favourable outcomes for depression, anxiety, quality of life, severity of pain, physical functioning, and use of health care resources. Components of an IPM programme can include physical rehabilitation, exercise therapy, cognitive restructuring, behavioural treatment, vocational rehabilitation, and drug management. The optimal programme structure and components have not been established, and programmes with various structures have shown clinical effectiveness. Closely tied to essential programme components are process variables, which are patient behaviours or cognitions that are the essential elements of a positive treatment outcome in IPMs. Significant process variables reveal “critical or pivotal changes that determine improvement from treatment.” For example, improvements in pain-related anxiety, catastrophizing, and helplessness have been found to predict improved clinical outcomes in interdisciplinary chronic pain management. Pain knowledge, specifically knowledge of the neurophysiology of pain, is a plausible process variable to predict positive outcomes in interdisciplinary treatment. Pain neurophysiology education (PNE), introduced to complement physical therapy for chronic pain, targets pain knowledge and may be an essential component of IPM programmes. Few studies have investigated the effectiveness of PNE; two recent reviews reported the results of only two and eight studies on the topic, respectively. Even so, there is promising evidence that PNE leads to improvements in return to work (RTW), physical performance, disability, and pain, both alone and in the context of a pain management programme. More important, PNE is associated with improvements in maladaptive pain beliefs such as catastrophizing and perceived disability. The rationale of PNE is to allow patients to increase their understanding of chronic pain and to reconceptualize pain by explaining the neurobiology and neurophysiology of pain. Explaining pain to patients alters their negative pain beliefs, such as the perception of nociceptive input as threatening; this can lead to an increased pain threshold or decreased somatic vigilance (vigilance or attentiveness to somatic inputs). Although patients are able to substantially increase their knowledge through a PNE session, whether changes in pain knowledge predict clinical outcomes has not been established. Therefore, pain neurophysiology knowledge is a potential process variable to investigate in the context of IPM.