

Gibbons SGT 2010 Influence of cognitive learning factors on psychosocial factors and central sensitization. Proceedings of: Neurodynamics & The Neuromatrix Conference. April 15-17; Nottingham, England

Common sub-classifications in current clinical practice include: patho-anatomical; movement patterns; pain mechanisms; and psychosocial factors & psychological conditions. Some problems with sub-classification are that there are no clear clinical prediction rules on how to diagnose and rehab them, or how to prioritize if all present at the same time. As well, they do not always address the underlying mechanisms of the cause. Further, they do not consider the broad range of problems that the chronic pain population present with. It is proposed that another sub-classification, Central Nervous System Coordination, be considered. This represents the ability of the central nervous system (CNS) to process sensorimotor information and cognitive learning information. The Motor Control Abilities Questionnaire (MCAQ) is an instrument that was developed to identify cognitive learning and sensory motor deficits along with related symptoms in adults. Research shows there is a strong relationship between sensory motor function and cognitive function. Cognitive learning problems (e.g. concentration, attention, memory) and sensory motor deficits (e.g. tactility, proprioception) are common in chronic pain. There is an overlap in the brain where these functions are processed. Competition occurs for the limited resources and a deficit occurs in one area depending on the prioritization and need for function. In the end, a function(s) within the central nervous system suffers. If there is reduced cognitive learning function there is an increased likelihood of negative thoughts or cognitive errors such as fear or anxiety. This may occur because the central nervous system does not have the resources to allow normal problem solving and develop adequate coping strategies. High scores on the MCAQ (CNS Coordination deficits) are associated with sensory hypersensitivity and reduced pressure pain thresholds which are components of central sensitization. The exact mechanisms for this are unknown. There may be incorrect information from the periphery due to altered sensory motor function and competition within the CNS interferes with normal inhibitory processes.

Significant cognitive learning deficits reduce a client's ability to take part and benefit from many standard types of therapy when skills such as reading, listening, concentrating, problem solving are involved. The identification of cognitive learning and sensory motor function are an important new sub-classification method. It may provide a new avenue for outcome prediction from acute pain and lead to the development of new intervention strategies for chronic pain. For example, many of the same strategies used for improving cognitive learning function also reduce central sensitization. It may be useful to consider a sub-group of chronic pain as a type of learning disability which will help better understand their presentation and direct intervention strategies.