Pain neuroscience education & behavioral treatment for chronic pain patients

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Learning objectives:

At the completion of this course, learners will be able to:

1. Apply evidence-based guidelines for chronic pain management to physical therapy practice;
2. Classify pain patients as having nociceptive, neuropathic or central sensitization pain;
3. Implement a thorough biopsychosocial assessment of a patient with chronic pain;
4. Provide pain neuroscience education to patients with chronic pain;
5. Devise an effective physical therapy program to remediate pain that engages the patient and considers cognitive/affective/emotive aspects of the pain experience.

Content:

Increasing evidence supports a cardinal role for physiotherapists in the treatment of chronic pain. Physiotherapists combine the unique skills for targeting the chronic pain patient's mind, body and brain concomitantly[1-5]. Yet physical therapists are often unaware of their ability to treat complex patients with chronic pain. Therefore, the course aims at learning physical therapists to apply evidence-based guidelines for chronic pain management.

Chronic pain represents a biopsychosocial problem, with maladaptive changes in the mind, body and brain. Education[6], exercise therapy[7] and physical activity interventions are effective treatments for various chronic pain disorders, including fibromyalgia, chronic neck pain[8], osteoarthritis[1,9], rheumatoid arthritis and chronic low back pain[2]. Although the clinical benefits of physiotherapy in these populations are well established (i.e. evidence based), clinicians struggle applying science in daily practice.

One of the reasons why clinicians experience difficulties in applying evidence in practice, is that they are unaware of their capacity to differentiate between various pain types. Indeed, a prerequisite for providing appropriate treatment is classifying pain patients as having either predominant nociceptive, neuropathic or central sensitization pain. Course participants will learn how physical therapists can classify their pain patients without relying on expensive or complex examinations. They will learn using a clinical algorithm for differentiating nociceptive from neuropathic and central sensitization pain in daily practice[10,11]. Furthermore, course participants will learn how to perform a thorough biopsychosocial assessment of patients with chronic pain so that they can assess the provoking and

contributing factors of the pain problem. This will allow them to provide individually-tailored physical therapy, targeting mind, body and brain.

At the mind level, reductions in maladaptive pain cognitions, especially pain catastrophizing and fear-avoidance beliefs, as well as increased pain self-efficacy beliefs, have been established as key contributors to positive outcome in exercise therapy programs for chronic pain. Such maladaptive cognitive factors are typically addressed in comprehensive exercise therapy programs that include not only exercise but also pain neuroscience education and activity self-management.

At the brain level, it is crucial to consider the concept of pain mechanisms, including aspects like central sensitization and dysfunctional endogenous analgesia in response to exercise as seen in some chronic pain populations. Hence, in patients with chronic pain and central sensitization it seems rational to target therapies at the brain rather than muscles, joints or cardiovascular system. More precisely, modern pain neuroscience calls for treatment strategies aiming at decreasing the sensitivity of the central nervous system (i.e. desensitizing therapies). An increasing number of studies support the use of physical therapy interventions like graded activity and graded exercise therapy, as desensitizing therapies for patients with chronic pain.

Besides maladaptive changes at the level of the mind and the brain, many patients with chronic pain show bodily dysfunctions like impaired neuromuscular control or articular damage. Course participants will learn how to address such dysfunctions within a broader biopsychosocial approach for the management of chronic pain.

Physiotherapists combine the unique skills for targeting the chronic pain patient's mind, body and brain concomitantly. A prerequisite for providing appropriate treatment is classifying pain patients as having either nociceptive, neuropathic or central sensitization pain. Once the chronic pain patients are correctly classified and the biopsychosocial aspects involved in the contribution of the problem are known, physiotherapy can include interventions like counselling, activity self-management, and graded exercise therapy tailored to the patient's preferences, needs, pain cognitions, musculoskeletal and central nervous system dysfunctions. A broad biopsychosocial view is required for applying effective physiotherapy for patients with chronic pain, and can be provided in primary, secondary or tertiary care. This accounts for physiotherapists working in the field of musculoskeletal pain, neurology, pediatrics, internal medicine and geriatrics.

Content of program:

- Short introduction
- Chronic pain: a matter of maladaptive changes in the mind, body & brain
- Classification of nociceptive, neuropathic and central sensitization pain in physiotherapy practice.
- Skills training biopsychosocial assessment and classification of chronic pain patients in physiotherapy practice
- Pain neuroscience education in clinical practice: theory, demonstration and skills training
- Behavioural therapy for chronic pain within a physiotherapy: graded activity

Educational modes:

The course content will be delivered through a mixture of methods, including:
- interactive lectures
- demonstrations (e.g. demonstrating pain neuroscience education)
- practical skills training:

- learning differential diagnosis between predominant neuropathic, nociceptive & central sensitization pain
- learning to perform a biopsychosocial physical therapy assessment
- pain neuroscience education in clinical practice
- exercise therapy & the patient-therapist communication to facilitate exercise interventions in chronic pain patients

- illustrations
- case studies

Key references

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Short bio Lynn Leemans

Lynn Leemans obtained her master's degree in Rehabilitation Sciences and Physiotherapy with a specialization in manual therapy in 2015 at the Vrije Universiteit Brussel, Belgium. In 2016, she successfully completed an advanced master's degree in Manual Therapy. After 3 years of combining working as a manual therapist with a teaching assignment at the Vrije Universiteit Brussel, she started her PhD in 2018. Now, Lynn is a fulltime PhD-researcher at the Vrije Universiteit Brussel, Belgium and a member of both the Pain in Motion international research group and the RERE Rehabilitation Research group. Her main domain of interest is the role of central pain mechanisms in chronic musculoskeletal pain patients, and more specific related to pain during movement.

Short bio Wouter Van Bogaert

Wouter Van Bogaert holds both a Master of Science degree in Physical Education and Kinesiology and a Master of Science degree in Rehabilitation Sciences and Physiotherapy. Since 2018, he is a pre-doctoral researcher at the Vrije Universiteit Brussel and a member of the Pain in Motion international research group. At the VUB, he is appointed as a researcher in the B²aSic-project, which focusses on the pain neuroscience education in patients with lumbar radiculopathy scheduled for surgery. His primary research interests include perioperative pain neuroscience education, as well as persistent pain and quality of life following surgery.

Short bio Laurence Leysen

Laurence Leysen holds a PhD in Rehabilitation Sciences and Physical Therapy, a master's degree in Rehabilitation Sciences and Physical Therapy and an advanced master in Manual Therapy. She is a fulltime researcher and lecturer at the Vrije Universiteit Brussel (Brussels, Belgium) and a member of both the Pain in Motion international research group and the RERE Rehabilitation Research group. She is interested in the role of central pain mechanisms in patients with chronic pain, particularly cancer survivors. She is (co-)author of 13 articles in international peer-reviewed journals from which 3 as first author. Since 2015 she teaches practice and science classes at the Vrije Universiteit Brussel (Belgium). Besides that, she gives numerous courses and lectures about chronic pain rehabilitation in Belgium and abroad (Netherlands, France, Spain).

Sleep management

Within the physiotherapeutic setting there is more and more attention for all kinds of lifestyle factors and their influence on the treatment of the patient. One of these lifestyle factors that should not be underestimated is sleep. In literature we see associations between sleeping problems and all kinds of disorders, including chronic pain, hypertension, obesity, fall problems in the elderly, ADHD, depression, all kinds of musculoskeletal problems, ... Sleep problems also occur in both children and adolescents through the use of technological devices (such as mobile phones, tablets, etc.) during the evening ritual or in bed. Since poor sleep has a far-reaching impact on social, emotional, behavioral and executive functions, it is obvious that the physical therapist cannot ignore this aspect.

In addition, a strong association between sedentary behavior and sleep problems is observed. In today's society, sedentary behavior is a growing problem. Not only does this have a negative influence on our physical and cardiovascular fitness, also the degree of sedentary behavior entails an increased risk of insomnia and other sleep disorders. As sleep problems in turn also interfere with physical activity, many patients end up in a vicious circle. As a physiotherapist, it is therefore important not only to support the patient on a physical level, but also to tackle the sleep problems in daily practice.

During this course day the participants are fully immersed in the theory and practical approach of sleep problems in clinical practice. The day starts with the basic principles of sleep and sleep disorders. The participants then learn to apply these principles in an education session for the patient. Next, we will discuss the use of a sleep diary (filling in, calculations, etc.), and the application of sleep restriction, stimulus control and reduction of medication use. The day is then concluded with a presentation on the influence of cognitions and sleep hygiene, after which relaxation techniques are also briefly mentioned.

After attending this course, the participants will be familiar with both the theory and the practical approach to sleep problems in clinical practice.

Learning objectives:

- Participants pay attention to sleep problems in clinical practice;
- Participants know the basic principles of sleep;
- Participants have insight into the need for sleep management in clinical practice;
- Participants are able to apply all aspects of sleep therapy in clinical practice.